STORMWATER
SOURCE CONTROL EVALUATION REPORT

CALBAG METALS COMPANY FACILITIES

2495 NW Nicolai Street, Portland Oregon
Oregon DEQ ECSI Site 5059 and

2500 NW Nicolai Street, Portland Oregon
Oregon DEQ ECSI Site 5238

Prepared for:

Oregon Department of Environmental Quality
Northwest Region
Portland, Oregon

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Table of Contents

Tables

Appendices

Appendix A – Environmental Site Assessment Subsurface Report, 2500 NW Nicolai Street, May 2009.

Appendix B – Independent Cleanup Pathway Final Report, 2500 NW Nicolai Street, November 2010.

Appendix C – DEQ No Further Action Determination letter, 2500 NW Nicolai Street, August 25, 2011.

Appendix D – Environmental Site Assessment Subsurface Report, 2495 NW Nicolai Street, May 2009.

Appendix D1 – Groundwater Monitoring Report, 2495 NW Nicolai Street, May 2010.

Appendix E – Stormwater Catch Basins Sediment Sampling Report, 2495 NW Nicolai Street, May 2009.

Appendix F – Sediment Sampling for PCB Roofs and NW 25th Ave. Letter Report, 2495 NW Nicolai Street, August 2009.

Appendix G – PCBs Sampling Asphalt and Soil Letter Report, 2495 NW Nicolai Street, November 2009.

Appendix H – Stormwater Source Control Investigation PCB Surface Sampling Letter Report, 2495 NW Nicolai Street, January 2010.

Appendix I – PCB Surface Washing Pilot Study Report, 2495 NW Nicolai Street, September 2010.

Appendix J – Focused Feasibility Study Report, 2495 NW Nicolai Street, April, 2011.

Appendix K – Soil Sample Laboratory Reports, Stormwater System Upgrade Trench and Excavation, 2495 NW Nicolai Street, August 2012.

Appendix L – Stormwater Management Report, 2495 NW Nicolai Street, October 2011.

Appendix M – Beneficial Water Use Determination Report, 2495 NW Nicolai Street, January 2013.

Appendix N – DEQ No Further Action Determination letter, 2495 NW Nicolai Street, May 30, 2013.

Appendix O – Laboratory Reports, NPDES 1200Z Permit, DEQ File No. 107179, 2495 NW Nicolai Street, 2012-2014.

Appendix P – Operation and Maintenance Manuals, StormwaterRX Systems Clara, Retenu and Aquip, 2495 NW Nicolai Street.

Acronyms

BES	Bureau of Environmental Services, Portland, Oregon
bgs	below ground surface
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and total xylene
BWUD	Beneficial Water Use Determination
Calbag	Calbag Metals Company
COC	contaminant of concern
COI	contaminant of interest
COPC	contaminant of potential concern
CSM	conceptual site model
CSO	combined sewer overflow
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
FS	feasibility study
GeoPro	GeoPro LLC
GLISP	Guild's Lake Industrial Sanctuary Plan
ICP	Independent Cleanup Pathway program, Oregon DEQ
JSCS	Joint Source Control Strategy
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
MRL	method reporting limit
MSL	mean sea level
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
ppm	parts per million
PRP	potentially responsible party
QA/QC	quality assurance and quality control
RA	risk assessment
RBC	risk based concentration
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
SAP	sampling and analysis plan
SPCC	Spill Prevention Control and Countermeasure Plan
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
TSS	total suspended solids
ug/kg	micrograms per kilogram
ug/l	micrograms per liter
VCP	Voluntary Cleanup Program, Oregon DEQ
USGS	U.S. Geological Survey
VOC	volatile organic compound

1 INTRODUCTION

1.1 Purpose

This report presents the results of a Stormwater Source Control Evaluation (SCE) for the Calbag Metals Company Inc. (Calbag) facilities located at 2495 and 2500 NW Nicolai Street, Portland, Oregon (Sites). Although the properties at 2495 and 2500 NW Nicolai Street are different landowners, the facilities are both operated by Calbag, and at the request of DEQ, both facilities are addressed in this SCE.

This SCE was performed in response to a request by the Oregon Department of Environmental Quality (DEQ) to identify, evaluate, and control sources of contamination that may potentially reach the Willamette River. This SCE is presented in a manner consistent with DEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (DEQ, October 2010).

1.2 Source Control Objective

Objectives of this Stormwater SCE are to demonstrate that existing and potential sources of contamination at the Sites have been mitigated and no additional source characterization or source control measures are needed.

1.3 Regulatory Framework

Two Calbag facilities that have received No Further Action (NFA) determinations under DEQ cleanup programs are evaluated in this Stormwater SCE.

Calbag's facility at 2500 NW Nicolai Street is assigned DEQ Environmental Cleanup Site Information (ECSI) Site ID 5238. DEQ issued a NFA determination for 2500 NW Nicolai Street in a DEQ Memorandum dated August 25, 2011 and stated that a Stormwater SCE is required in accordance with the 2005 EPA/DEQ Joint Source Control Strategy.

Calbag's facility at 2495 NW Nicolai Street is assigned DEQ ECSI Site ID 5059. DEQ issued a No Further Action (NFA) determination for 2495 NW Nicolai Street in a DEQ Memorandum dated May 30, 2013 (revised February 12, 2014) and stated that a Stormwater SCE is required in accordance with the 2005 EPA/DEQ Joint Source Control Strategy.

1.4 Report Organization

Calbag's 2500 NW Nicolai Street facility does not discharge stormwater directly to the Willamette River Portland Harbor Superfund Site and therefore will not be carried through this Stormwater SCE but will be summarized in Section 2.

- Section 2 – 2500 NW Nicolai Street (ESCI 5238)

  Narration and illustrations of site physical features, including location, topography, depth to groundwater, building locations, surface cover and utilities. Description of stormwater conveyance system, site ownership and operating history, regulatory history and previous investigations including soil sampling and groundwater monitoring.

The remaining sections of this report are organized as described below and only apply to the Calbag facility at 2495 NW Nicolai Street (ESCI 5059).

- Section 3 – Site Background

  Narration and illustrations of site physical features, including location, topography, depth to groundwater, building locations, surface cover and utilities. Description of stormwater conveyance system, site ownership and operating history, regulatory history and previous environmental investigations including groundwater monitoring, roof sediment sampling, roadway sampling, catch basin sampling, and asphalt and concrete surface sampling.

- Section 4 – Potential Sources and Contaminants of Interest

  Narration, illustrations and tabulation of potential sources of contamination, list of COIs, and containment and control measures.

- Section 5 – Ongoing Stormwater Management Measures

  A summary of facility's BMPs.

- Section 6 – Data Collection and Interpretation

  A narration including illustrations and tabulations of previous catch basin and stormwater sampling including NPDES data at a treatment system outlet.

- Section 7 – Source Control Measures

  A narration including illustration and tabulations of treatment systems construction and repaving of roadway.

- Section 8 – Source Control Evaluation

  A description of data evaluation and effectiveness of source control measures.

- Section 9 – Findings and Conclusions

  A narration of identified potential contaminant sources, how such potential sources are controlled, effectiveness of BMPs and acceptable risk.

2 2500 NW NICOLAI STREET - ESCI 5238

2.1 Site Background

2.1.1 Location

The Calbag facility located at 2500 NW Nicolai Street, T1N, R1E, Section 28 (Willamette Baseline and Meridian) consists of tax lots 1 through 6, Block 3 of the Versteegs Addition in Multnomah County, Portland, Oregon (see Site in Figure 1).

2.1.2 Site Description

The Site consists of 0.9 acres of land developed with one industrial building, and 0.23 acres of undeveloped land (labelled "NW 25th St" on some City maps). Ground cover consists of the building and asphalt paving along the eastern margin of the Site. Ground surface elevation at the Site is approximately 65 to 68 feet above mean sea level. The ground surface at the site slopes gradually to the northeast.

The industrial building is approximately 30,000 square-foot and consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof. The building can be accessed from the north via an entrance from NW Nicolai Street, and along bay doors along the east side of the building.

There are no surface water bodies on or adjacent to the Site. The nearest surface water body is the Willamette River, flowing northward approximately ½ mile east of the Site.

The City of Portland Water Bureau provides water supply to the Site with no restriction on use of potable water for industrial uses. No water supply wells are located on the property. Calbag does not use groundwater at the property for any purpose, nor are there any future plans for such use. There are no dry wells at the facility.

No municipal or residential water supply wells, or other wells such as industrial supply wells, were identified within ¼ mile of the Site. Other wells identified at greater than ¼ mile from the site include monitor wells and industrial use wells

The Site is located on a geomorphic terrace along the western margin of the Willamette River, and at the base of the Tualatin Mountains to the west. The terrace is underlain by younger Quaternary sedimentary flood deposits of the Willamette River and at depth by Pleistocene-age fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods. In some areas, artificial fill occurs at the surface of the terrace, consisting of various gravel, debris, sawdust and mill ends that were deposited as part of the industrial development of the northwest Portland industrial district.

The Site is underlain mainly by Pleistocene flood deposits with a thin veneer of artificial fill at ground surface. Investigations at the Site encountered about 1 foot of artificial fill, overlying clayey silt to about 12 feet, and below 12 feet depth encountered silty sand with lenses of pebbly gravel.

Unconfined groundwater is present beneath the Site at about 45 to 50 feet depth below ground surface. Groundwater flow in the vicinity of the Site is northerly, consistent with the property location in a flood plain terrace adjacent to the northerly-flowing Willamette River. Shallow groundwater flowing beneath the property is presumed to discharge to the Willamette River at some point downgradient. Groundwater in the upper 60 feet of the subsurface beneath the property was investigated.

2.1.3 Stormwater Conveyance System

The stormwater conveyance is shown in Figure 2 and flows through a line into a catch basin within NW Nicolai Street and then into the stormwater gravity main underlying NW Nicolai Street.

The stormwater gravity main within NW Nicolai Street connects with the City's Westside combined sanitary/stormwater sewer overflow (CSO) system tunnel which connects to a treatment plant.

2.1.4 Site Ownership and Operating History

Shaker Square LLC, P.O. Box 10067, Portland, Oregon 97296-0067 owns the Site. Calbag has operated the facility at the Site since 1960. The building on the property was apparently constructed on undeveloped land in 1949, and has been in use since that time.

Calbag was formerly known as Calbag Steel Warehouse Co. and changed its name to Calbag Metals Company in June 1965. The company was founded in 1907 and is based in Portland, Oregon with a second location in Tacoma, Washington.

Calbag is a non-ferrous scrap metal company (SIC 5093). Calbag purchases scrap metal for resale to the manufacturing industry. Calbag facilities in Portland, Oregon operate under a comprehensive Environmental Management System (EMS) and current Spill Prevention Countermeasures and Control Plan (SPCC (EMS WI-09)). The EMS ensures that environmental impacts are understood, environmental regulations are followed, important procedures are formally documented, and employees are trained as required. The EMS is evergreen, continuously improved, and subject to rigorous internal and external audit. This EMS is currently registered as ISO 14001 compliant. ISO 14001 is an environmental management standard. It specifies a set of environmental management requirements for environmental management systems. The purpose of this standard is to help all types of organizations to protect the environment, to prevent pollution, and to improve their environmental performance.

The building contains areas for maintenance, storage and processing of aluminum borings, brass sorting, high-temperature alloy sorting, and finished goods storage. Tanks containing water soluble cutting coolant fluid that drains from aluminum borings are housed in a covered area within storage totes along the east side of the building.

Coolant water is a mixture of approximately 93 percent water and 7 percent non-PCB oil coolant and coats the aluminum and titanium shavings (borings) that are compressed into bales and pucks (by the Baler and Pucker) and sold to scrap metal consumers and foundries. The compression process generates the freely available coolant water that adheres to the shavings which is collected at the Baler and at the Pucker.

All coolant water is collected within the facility and periodically stored in plastic or stainless steel containers known as totes. Totes are constructed of a plastic or steel container inside a cage of structurally competent steel tubing, welded together in grid-like fashion and mounted upon a rigid steel forklift-compatible base. All filled totes are stored along the west inside wall of the north end of the building next to the Pucker.

On an as-needed basis, a licensed liquids waste handler periodically removes and properly disposes of the coolant water from the totes and two enclosed, above-ground tanks with secondary containment located at the facility.

2.1.5 Regulatory History

An Independent Cleanup Pathway (ICP) agreement between DEQ and the Site owner was completed on August 14, 2009. An ICP report by GeoPro was submitted to DEQ in November 2010 (see Appendix B). Based on the ICP investigation and report, DEQ issued the Site a NFA determination on August 25, 2011 including the request for a Stormwater SCE (see Appendix C).

2.1.6 ICP Site Investigation

A subsurface environmental investigation of Site soil and groundwater was conducted between October 2008 and January 2009. The purpose of the investigation was to evaluate the potential impact from facility operations on soil and shallow groundwater beneath the Site. The investigation is included in Appendix A.

The subsurface investigation consisted of drilling and sampling three soil borings and installation and monitoring three shallow groundwater monitor wells (see Figures 5 and 6). Chemicals detected in soil and groundwater are summarized in the following Table 1 and 2.

2.2 Findings and Conclusions

The 2500 NW Nicolai Street Site is not carried forward through this Stormwater SCE based upon the following conclusions resulting from the Site subsurface environmental investigation:

- The pathways from this upland site to the Portland Harbor Superfund Site in the Willamette River are groundwater discharge and stormwater discharge.
- Chemicals detected in groundwater include six metals with only four metals (chromium, copper, lead and zinc) at concentrations that slightly exceed their Joint Source Control aquatic Screening Level Values (SLVs), and four volatile organic constituents (carbon tetrachloride, chloroform, o-xylene and tetrachloroethene) that do not exceed SLVs.
- Chemicals detected in soil are at relatively low concentrations and are not considered to represent a significant source for leaching to groundwater.
- The 2500 NW Nicolai Site is completely covered by building and pavement with no exposed soil that could be eroded thus limiting the potential for infiltration of stormwater into the subsurface.
- Site stormwater is conveyed to the City of Portland Westside CSO system and treated by the City prior to discharge to the Willamette River.

2.3 Tables – 2500 NW Nicolai Street

Table 1 – Detected Concentrations of Chemicals in Soil – 2500 NW Nicolai Street

CHEMICALS	SAMPLES		DEQ RISK-BASED CONCENTRATIONS		
	Sample Number	Maximum Concentration	Occupational Worker	Construction Worker	Excavation Worker
Concentrations in mg/kg					
Arsenic	MW4-S-6	<14	1.7	13	370
Barium	B7-S-03	250		62000	
Chromium Total	B8-4	26	180	920	26000
Lead Total	B9-S-03	67	800	800	800
Concentrations in ug/kg					
Acenaphthylene	B7-S-03	130		19000	
Anthracene	B7-S-03	120		93000	
Benzo(a)anthracene	B7-S-03	270	2.7	21	590
Benzo(b)fluoranthene	B7-S-03	1400	2.7	21	590
Benzo(k)fluoranthene	B7-S-03	640	27	210	5900
Benzo(g,h,i)perylene	B7-S-03	2500			
Benzo(a)pyrene	B7-S-03	640	0.27	2.1	59
Chrysene	B7-S-03	480	270	2100	59000
Dibenz(a,h)anthracene	B7-S-03	620	0.27	2.1	59
Fluoranthene	B7-S-03	550	29000	8900	
Fluorene	B7-S-03	16	41000	12000	
Ideno(1,2,3-c,d)pyrene	B7-S-03	1600	2.7	21	590
1-Methylnaphthalene	B7-S-03	10			
2-Methylnaphthalene	B7-S-03	15			
Naphthalene	B7-S-03	31	23	580	16000
Phenanthrene	B7-S-03	260			
Pyrene	B7-S-03	530	21000	6700	

Table 1 Notes:
1. Maximum concentrations detected from all soil samples.
2. Risk-Based Concentrations (RBCs) from DEQ Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September, 22, 2003.
3. Yellow shaded cell indicates maximum soil concentration exceeds an RBC for at least one exposure pathway.
4. Gray shaded cell indicates exposure pathway exceeded by maximum soil concentration.
5. Blank cell indicates no RBC for that chemical for that pathway, or that the RBC exceed the solubility limit for that chemical.

Table 2 – Detected Concentrations of Chemicals in Groundwater – 2500 NW Nicolai Street

CHEMICALS	SAMPLE LOCATION	MAXIMUM CONCENTRATION	DEQ AQUATIC SLV
Concentrations in ug/l			
Arsenic	MW-4	6.2	150
Chromium	MW-4	24	11
Copper	MW-4	28	9
Lead	MW-4	9.7	2.5
Nickel	MW-4	25	52
Zinc	MW-4	160	120
Carbon Tetrachloride	MW-6	0.35	74
Chloroform	MW-5	3.2	1240
o-Xylene	MW-6	0.22	
Tetrachloroethene	MW-4	0.3	840

Table 2 Notes:

1. Maximum concentration detected from all groundwater samples.

2. Aquatic freshwater screening level values (SLVs) from DEQ Guidance for Ecological Risk Assessment: Levels I, II, III, IV, Final, April 1998.

3. Yellow shaded cell indicates maximum soil concentration exceeds its SLV.

4. Blank cell indicates no SLV for that chemical for aquatic receptors.

2.4 References – 2500 NW Nicolai Street

BMEC and GeoPro, "Responses to U.S. EPA CERCLA Section 104(e) Information Request", Calbag Metals 2500 NW Nicolai Street, Portland, Oregon, July 2008.

BMEC and GeoPro, "Phase I Environmental Site Assessment Report", Calbag Metals, 2500 NW Nicolai St., Portland, OR, August 29, 2008.

GeoPro Geologic Services LLC, "Environmental Site Assessment Subsurface", Calbag Facility, 2500 NW Nicolai Street, Portland, Oregon, May 2009.

GeoPro Geologic Services LLC, "Groundwater Monitoring Report", Calbag Facility, 2500 NW Nicolai Street, Portland, Oregon, May 2010.

GeoPro LLC, "Independent Cleanup Pathway Final Report", Calbag Metals Company Facility, 2500 NW Nicolai St., Portland, Oregon, November 2010.

Oregon Department of Environmental Quality, "Guidance for Ecological Risk Assessment: Levels I, II, III, IV", Final, April 1998.

Oregon Department of Environmental Quality, "Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites", Final, July 1, 1998.

Oregon Department of Environmental Quality, "Independent Cleanup Pathway Report Preparation Guide", March 26, 2001.

Oregon Department of Environmental Quality, "Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites", September 22, 2003.

Oregon Department of Environmental Quality, Revision, "Guidance for Evaluating the Stormwater Pathway at Upland Sites", January 2009.

Oregon Department of Environmental Quality, August 25, 2011, Letter Regarding No Further Action Determination, 2500 NW Nicolai St., Portland, Oregon.

3 2495 NICOLAI STREET - ESCI 5059

3.1 Site Background

3.1.1 Location

Calbag's facility located at 2495 NW Nicolai Street, T1N, R1E, Section 29 (Willamette Baseline and Meridian), consists of Tax Lots 100, 1500, 1600, 1700, 1800, 1900, and 2000 in Multnomah County, Portland, Oregon (see Figure 1). Calbag also operates on Tax Lot 700 that is leased from the City of Portland and is part of the Guilds Lake remediation area under ECSI #404. Tax Lot 700 was not part of the DEQ revised NFA determination issued on February 12, 2014 since it was part of a separate cleanup decision with the City of Portland in June 1995.

3.1.2 Topography

Site elevations are approximately 65 to 68 feet above mean sea level (MSL}, and relatively flat with a slight slope to the northeast. The Willamette River is the closest surface water body, located approximately 1/2 mile to the northeast.

3.1.3 Depth to Groundwater

Calbag's 2495 facility is located on a geomorphic terrace west of the Willamette River and east of the Tualatin Mountains. The terrace is formed by Quaternary sedimentary flood deposits and Pleistocene fine-grained geologic units of coarse sand to silt. The 2495 facility is directly underlain by Pleistocene flood deposits with a thin veneer of man-made fill at the ground surface.

Environmental site investigations encountered an unconfined water table with an average static water level of approximately 44 feet bgs (see Table 3). The groundwater flow direction was estimated to be north-northeast toward the Willamette River with local variation (see Figure 6).

Table 3 – Groundwater Static Water Levels – 2495 NW Nicolai Street

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-1	56.010	55.841	691089.023	7637324.331	50	40/50	2/20/09	39.55	16.291
							3/22/10	41.66	14.181
MW-2	60.289	60.049	691054.877	7637663.578	49.5	39.5/49.5	2/20/09	43.69	16.359
							3/22/10	45.65	14.399
MW-3	62.943	62.567	690834.411	7637665.522	55	45/55	2/20/09	46.29	16.277
							3/22/10	48.23	14.337

Table 3 Notes:
Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Wells installed October 31 – November 1, 2008.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008

3.1.4 Physical Description

The property consists of 1.91 acres with 0.23 acres undeveloped but paved. The property is accessed from the south via entrances from NW Nicolai Street and from the west via an entrance from NW 25th Place.

Several buildings cover the 1.68 acre developed portion of the property including an operations office building, a general storage building, open canopy and tent sheds, and a processing warehouse. The warehouse is a flat-roofed wood and steel-framed building with concrete exterior walls and a concrete foundation that covers 67,281 square feet. The paved back of the property is leased which includes an engineered cap constructed under DEQ oversight as part of the Guilds Lake site remediation (see Figure 1).

The property is zoned as heavy industrial (IH) by the City's Bureau of Planning and Sustainability and is expected to remain as heavy industrial into the foreseeable future. The property is located in an area of northwest Portland surrounded by heavy industry as past and current land use. This area is also within the Guild's Lake Industrial Sanctuary Plan District, formalized through adoption of Ordinance No. 176092 by the City Council on December 21, 2001. An industrial sanctuary preserves land for long-term industrial use.

3.1.5 Utilities

The electric utility is supplied through overhead lines. City water is supplied through a waterline on the eastern side of the property.

3.2 Stormwater Conveyance System

3.2.1 Drainage Areas

Stormwater at the facility is managed in six runoff drainage areas, referred to as DA1 through DA5. Previous and current drainage area designations are shown on Figure 3. The function of each drainage area is summarized below:

- Drainage Area DA1

Drainage area DA1 covers approximately 0.52-acres and includes the roofs of the warehouse and office. Surface roof drainage enters three roof drains, RD 1-1, RD 1-2 and RD 1-3 which are connected without treatment to a stormwater line and then to the stormwater gravity drain main underlying NW Nicolai Street.

- Drainage Area DA2

Drainage area DA2 covers approximately 0.84-acres and includes a portion of the repaved asphalt roadway east of the warehouse near NW Nicolai Street alongside the DA1 warehouse. The roadway has been resurfaced with asphalt covering previously exposed railroad tracks. The northeastern warehouse roof surface drainage flows into roof drains RD 2-1 and RD 2-2, then flows into catch basins CB 2-1 and CB 2-2 which are connected without treatment to the stormwater gravity main line underlying NW Nicolai Street.

- Drainage Area DA3

Drainage area DA3 covers approximately 1.85-acres and includes most of the Guilds Lake Remediation Cap and the roof drainage through RD 6-1 which is connected to a stormwater line to manhole 3-2. Surface drainage enters catch basins CB 3-1 and CB 3-2 which are connected through a below-grade coalescing plate oil/water separator to a sand filter stormwater treatment system. The sampling site for the NPDES 1200Z Permit (DEQ File No. 107179) is at the outflow port of the treatment system. Discharge from the treatment system is through a 12-inch line to outfall #16 at the Willamette River.

The sand filter stormwater treatment system (Aquip) was initially installed in 2008 as a replacement for a previous filtration system installed in 2003. In 2009 the sand filter treatment system was upgraded using a Clara settling unit. In 2012 the Clara unit was replaced by a Retenu sediment control module using three filtration chambers and backwash from holding tanks. Operation and Maintenance Manuals for the Clara, Retenu and Aquip stormwater treatment systems are included in Appendix P.

- Drainage Area DA4

Drainage area DA4 covers approximately 0.97-acres and includes a warehouse roof, the asphalt paved roadway west of the warehouse, a concrete and asphalt paved recycling storage area, and a small portion of the Guilds Lake Remediation Cap of DA3. The western roof portion of the warehouse flows to roof drains RD 4-1 and RD 4-2. Surface drainage enters catch basin CB 4-1 and CB 4-2 which are connected to a below-grade coalescing plate oil/water separator prior to a sand filter stormwater treatment system. Discharge from the stormwater treatment system is to the combined gravity main (CSO) underlying NW 25th Place under City BES Permit DA-2013-001, Discharge Authorization for Contaminated Stormwater.

Prior to the construction of the stormwater treatment system, DEQ requested a Focused Feasibility Study be completed (see Appendix J). An existing line from CB 4-1 to the CSO was abandoned and plugged. A new discharge line was installed between CB 4-1 and the oil/water separator, and CB 4-1 was replaced with a larger catch basin.

- Drainage Area DA5

Drainage area DA5 covers approximately 0.25-acres and includes surface discharge from the asphalt paved area north of the DA4 stormwater treatment system adjacent to NW 25th Place. Stormwater collecting in DA5 drains to catch basin CB 5-1 and discharges by gravity flow through a 6-inch cast iron pipe directly without treatment to the combined gravity main within NW 25th Place.

3.3 Site Ownership and Operating History

The Site is owned by Shaker Square LLC, P.O. Box 10067, Portland, Oregon 97296-0067 and the facility is operated by Calbag. Calbag was formerly known as Calbag Steel Warehouse Co. and changed its name to Calbag Metals Company in June 1965. The company was founded in 1907 and is based in Portland, Oregon with a location in Tacoma, Washington.

Calbag is a non-ferrous scrap metal company (SIC 5093). Metals arrive in many forms, with sheet, plate, pipe, castings, fabricated pieces, bare and insulated wires, and borings the most common. Common scrap suppliers include large industrial companies, other scrap dealers and recyclers, scrap peddlers, contractors such as electricians and plumbers, and the general public. The facility utilizes the site for various operations as shown in Figure 11.

Calbag purchases wire and other used metals from post-consumer scrap, post-industrial scrap, and building demolitions. Calbag also purchases new manufacturing scrap resulting from industrial processes and construction. The primary metals purchased are aluminum, copper, brass, and stainless steel. Calbag also purchases relatively small amounts of other materials such as zinc alloys, nickel alloys, leads, titaniums, magnesiums and copper bearing scrap such as electric motors and consumer electronics.

Material is often delivered in semi-trucks, general delivery trucks, pickup trucks and cars. Calbag also provides drop box delivery and retrieval services for some industrial firms. Incoming material may be loose, in drums, in gaylords (large cardboard boxes), baled, or in drop boxes. Material is moved around the facility using propane-powered forklifts and diesel-powered front-end loaders. Calbag does not purchase or store mercury, items containing PCBs, or other hazardous materials.

Calbag facilities in Portland, Oregon operate under a comprehensive Environmental Management System (EMS). The EMS ensures that environmental impacts are understood, environmental regulations are followed, important procedures are formally documented, and employees are trained as required. The EMS is evergreen, continuously improved, and subject to rigorous internal and external audit. This EMS is currently registered as ISO 14001 compliant. ISO 14001 is an environmental management standard. It specifies a set of environmental management requirements for environmental management systems. The purpose of this standard is to help all types of organizations to protect the environment, to prevent pollution, and to improve their environmental performance.

Under Calbag's EMS, activities with a very high potential for negative environmental impacts, including but not limited to stormwater, are carried out according to detailed procedures referred to as Work Instructions (WI-XX). The Calbag EMS also specifies Standard Operating Procedures (SOPs) for administrative aspects such as training and records management.

3.4 Regulatory History

The City of Portland Bureau of Environmental Services (BES) performed inline solids sampling within Outfall Basin 16 in 2007 as part of a Willamette River source control investigation and suggested that the Calbag 2495 facility is a potential source of PCBs and other constituents discharging into the stormwater outfall for Basin 19.

In January 2008, the Environmental Protection Agency (EPA) sent letters to approximately 280 current and former property owners, tenants, or facility operators in the general vicinity of the Portland Harbor Superfund Site. In May

2008, GeoPro prepared a summary memorandum describing a potential source of PCBs in the facility stormwater system. Calbag responded to the EPA request in July 2008 in a report titled "Responses to U.S. EPA CERCLA Section 104(e) Information Request". Calbag then entered into a Voluntary Cleanup Program (VCP) Agreement with DEQ. From 2008 to 2013, GeoPro performed environmental site characterization investigations. Based on these investigations, DEQ issued a NFA determination for the site in May 2013 and revised it in February 2014 to correct tax lot references (see Appendix N).

Discharge from one onsite stormwater treatment system (located in drainage area DA3) is regulated under an existing NPDES 1200-Z Permit (DEQ File No. 107179). Discharge from the treatment system is through a 12-inch line that connects to the City lines that discharge at outfall 19 at the Willamette River.

3.5 Previous Investigations

The following is a summary of environmental investigations that have been completed at the Site. Further details on prior investigations can be found in documents included in the Appendices and cited in the Reference section. Groundwater, soil, sediment, concrete, asphalt, roof, trench, catch basin, and treatment system sampling locations are shown in Figure 5.

<u>October 2008 – ASTM 1527 Phase I Environmental Site Assessment</u>

This report summarized results for one stormwater sample collected at the existing treatment system showing detection of PCBs. The treatment system has since been upgraded.

<u>May 2009 – Environmental Site Assessment Subsurface Investigation</u>
<u>May 2010 – Groundwater Monitoring Report</u>

The objective of this subsurface investigation was to evaluate environmental conditions identified in the Phase I report and to collect and analyze groundwater samples.

An investigation of soil and groundwater was conducted between October 2008 and January 2009. Three groundwater monitoring wells were installed. Six borings were completed to sample only soil. A second round of groundwater sampling was conducted in 2010 at the request of DEQ. The groundwater flow direction is shown in Figure 6.

The purpose of the investigation was to evaluate the potential for site operations to impact soil and shallow groundwater beneath the site, primarily from metals and petroleum hydrocarbons, and to determine the direction of shallow groundwater flow. Monitor well borings encountered silty, well sorted, brown fine sand from about 12 feet to about 40 feet depth. Below the silty sand, each monitor well boring encountered groundwater in a sandy pebbly gravel unit, approximately 5 feet thick. Well sorted silty sand below the gravel was less saturated. Monitor wells are screened within the gravel zone.

Metals were not detected in groundwater at concentrations that exceed their aquatic SLVs although practical quantitation limits (PQLs) for many of the metals (berylium, cadmium, copper, lead, nickel, and selenium) were slightly or significantly higher than their SLVs. However, none of these metals, except for lead, were detected at elevated concentrations in onsite soil. PCBs as Aroclors were detected in groundwater at concentrations higher than their SLVs and only Aroclor 1248 was detected in soil in boring B3 at concentrations below its soil SLV. Chloroform was detected in groundwater monitor wells MW-1 and MW-3 at concentrations higher than their SLVs. Chloroform is a common laboratory contaminant.

The Environmental Site Assessment Subsurface Report is included in Appendix A. The Groundwater Monitoring Report is included in Appendix D1. The comment on page 3 in Appendices D and D1 regarding batteries has changed. A new policy now accepts batteries. The following Table 4 summarizes the results of sampling groundwater, Table 5 summarizes the results of sampling soil during the installation of the monitor wells, and Table 6 summarizes the results of sampling soil from borings.

Table 4 – Groundwater Analyses Monitor Wells – 2495 NW Nicolai Street

CHEMICALS	**DEQ SLV**	**DEQ RBC** ug/l [2]			**MW-1** (40-50) ug/l [3]		**MW-2** (39-49) ug/l		**MW-3** (45-55) ug/l	
	ug/l [1]	Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
METALS-TOTAL (EPA 200.8/7470A)										
Antimony	1600				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	0.038	0.13	0.27	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	73	150	290	<11	<11	<11	<11	<11	<11
Cadmium	2.2	18	37	73	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium	11	55,000	110,000	220,000	<11	<11	<11	<11	<11	<11
Copper	9	1500	2900	5800	<11	<11	<11	<11	<11	<11
Lead	2.5	15	15	15	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	11	22	44	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	730	1500	2900	<22	<22	<22	<22	<22	<22
Selenium	5				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12				<11	<11	<11	<11	<11	<11
Thallium	40				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120				<28	<56	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)										
Antimony	1600				<5		<5		<5	
Arsenic	150	0.038	0.13	0.27	<3		<3		<3	
Beryllium	5.3	73	150	290	<10		<10		<10	
Cadmium	2.2	18	37	73	<4		<4		<4	
Chromium	11	55,000	110,000	220,000	<10		<10		<10	
Copper	9	1500	2900	5800	<10		<10		<10	
Lead	2.5	15	15	15	<1		<1		<1	
Mercury	0.77	11	22	44	<0.5		<0.5		<0.5	
Nickel	52	730	1500	2900	<20		<20		<20	
Selenium	5				<5		<5		<5	
Silver	0.12				<10		<10		<10	
Thallium	40				<5		<5		<5	
Zinc	120				<50		<50		<50	
PCBs AROCLORS (EPA 8082)										
Aroclor 1016		0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)										
alpha-BHC	2.2				<0.0047		<0.0047		<0.0047	
beta-BHC	2.2				<0.0047		<0.0047		<0.0047	
delta-BHC					<0.0047		<0.0047		<0.0047	
gamma-BH C (Lindane)	0.052	0.012	0.058	0.065	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	0.0029	0.014	0.016	<0.0047		<0.0047		<0.0047	

CHEMICALS	DEQ SLV	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
	ug/l [1]	Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Aldrin	0.06	0.00077	0.0037	0.0041	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	0.0062	0.022	0.045	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	
alpha-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	
4,4'-DDE		0.039	0.19	0.21	<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	0.24	0.82	1.7	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	0.17	0.58	1.2	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	0.00081	0.0039	0.0044	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endrin	0.036	11	22	44	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde					<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03				<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate					<0.0047		<0.0047		<0.0047	
Endrin Ketone					<0.019		<0.019		<0.019	
Toxaphene					<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)										
1,1,1,2-Tetrachloroethane	186				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	9,100	18,000	38,000	<0.2	<0.2	<0.2	<0.2	<0.2	**0.46**
1,1,2,2-Tetrachoroethane	2,200				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9,400	0.23	0.83	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	2.3	11	13	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	340	680	1,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene		15	29	61	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane					<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (EDB)		0.0063	0.031	0.034	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	370	740	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane (EDC)	20,000	0.14	0.69	0.78	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5,700				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		360	730	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	0.42	2.3	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)					<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4,760				<1	<1	<1	<1	<1	<1
2-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99				<2	<2	<2	<2	<2	<2
4-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1,500				<5	<5	<5	<5	<5	<5
Benzene	130	0.39	1.7	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Bromobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		0.12	0.59	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		2.7	12	16	<1	<1	<1	<1	<1	<1
Bromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92				<0.2	<0.2	<0.2	<0.2	<0.2	**0.28**
Carbon Tetrachloride	74	0.41	1.7	2.4	<0.2	<0.2	<0.2	<0.2	**0.35**	**0.31**
Chloroethane		21,000	42,000	88,000	<1	<1	<1	<1	<1	<1
Chlorobenzene	50	91	180	380	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroform	1,240	0.19	0.98	0.99	**1.3**	**1.2**	<0.2	<0.2	**0.44**	**0.81**
Chloromethane		190	380	790	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	590	73	150	290	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	1.4	6.7	7.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene		0.0081	0.39	0.44						
Hexachlorobutadiene	9.3				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)					<1	<1	<1	<1	<1	<1
Isopropylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	200	410	850	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2,200				<1	<1	<1	<1	<1	<1
Methy t-Butyl Ether (MTBE)		12	53	67	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone					<2	<2	<2	<2	<2	<2
Naphthalene	620	0.14	0.78	0.72	<1	<1	<1	<1	<1	<1
n-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		680	1,400	2,800	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		200	410	850	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Isopropyltoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		1,600	3,200	6,700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethene	840	11	49	64	**0.3**	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	9.8	2,300	4,600	9,200	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21,900	0.43	1.7	3.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane (Freon 11)		1,300	2,600	5,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16				<2	<2	<2	<2	<2	<2
Vinyl Chloride		0.025	0.059	0.52	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)										
Naphthalene	620	0.14	0.78	0.72	<0.095	<0.094	<0.095	<0.095	<0.094	<0.094

CHEMICALS	**DEQ SLV** ug/l [1]	**DEQ RBC** ug/l [2]			**MW-1** (40-50) ug/l [3]		**MW-2** (39-49) ug/l		**MW-3** (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
2-Methylnaphthalene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
1-Methylnaphthalene	201				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenaphthylene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenapththene	520	2,200			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluorene	3.9	1,500			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Phenanthrene	6.3				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Anthracene	13				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluoranthene	6.16				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Pyrene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Benzo(a)anthracene	0.027	0.029	0.088	0.56	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Chrysene		0.16	0.66		<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(b)fluoranthene		0.011	0.039	0.16	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(k)fluoranthene		0.29			<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(a)pyrene	0.014	0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Ideno(1,2,3-c,d)pyrene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Dibenz(a,h)anthracene		0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(g,h,i)perylene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
PETROLEUM HYDROCARBONS										
Diesel Range (NWTPH-Dx)		100	100	430	<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)					<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		110	110	450	<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)					<5200		<5200		<5200	
Total Organic Carbon						<1000		<1000		<1000

Table 4 Notes:
[1] Freshwater aquatic Screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998.
[2] Risk-Based Concentrations (RBCs) for ingestion & inhalation from tapwater, "Risk-Based Decisionmaking Guidance", DEQ, 2003, Table of Risk-Based Concentrations (updated June 7, 2012). RBCs for residential (Res), Urban Residential (URes), and Occupational (Occ) exposures.
[3] Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.
[4] Date of sampling.
Blank cell means not analyzed, or no available SLV/RBC. Detected concentration below practical quantitation limit (PQL) noted as (<) with its respective PQL value. **Bolded** values are concentrations detected above the respective PQL.
Grey shaded cells are PQLs greater than one or more respective DEQ RBC. Yellow shaded cells are detected concentrations that exceed one or more DEQ RBC.

Table 5 – Soil Analyses Monitor Wells – 2495 NW Nicolai Street

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3[3]	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg									
Antimony	64	410[a]									
Arsenic	7	1.7	<13	<13	<13	<14	<14	<12	<12	<13	<13
Beryllium	na	2000									
Barium	na	>100x10[3]	**190**	**170**	**200**	**160**	**150**	**120**	**200**	**170**	**150**
Cadmium	1	510	<0.63	<0.66	<0.63	<0.68	<0.68	<0.58	<0.6	<0.65	<0.64
Chromium (total)	111	180	**19**	**24**	**21**	**19**	**21**	**13**	**17**	**27**	**17**
Copper	149	38000									
Lead	17	800	**150**	**12**	**6.5**	**14**	**8**	**6.1**	**200**	**13**	**8.1**
Mercury	0.07	310	<0.32	<0.33	<0.31	<0.34	<0.34	<0.29	**0.65**	<0.32	<0.32
Nickel	48.6	20000									
Selenium	2	5100[a]	<13	<13	<13	<14	<14	<12	<12	<13	<13
Silver	5	5100	<0.63	<0.66	<0.63	<0.68	<0.68	<0.58	<0.6	<0.65	<0.64
Thallium	na	82[a]									
Zinc	459	310[a]									
METALS-DISSOLVED (EPA 200.8/7470A)	na										
Antimony											
Arsenic											
Beryllium											
Barium											
Cadmium											
Chromium (total)											
Copper											
Lead											
Mercury											
Nickel											
Selenium											
Silver											
Thallium											
Zinc											
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg									
Aroclor 1016	530	21000[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1221		620[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1232		620[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1242		740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1248	1500	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1254	300	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1260	200	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1262			<63	<66	<63	<68	<68	<58	<60	<65	<64
Aroclor 1268			<63	<66	<63	<68	<68	<58	<60	<65	<64
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg										
alpha-BHC											
beta-BHC											

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3[3]	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09
delta-BHC											
gamma-BHC (Lindane)	4.99										
Heptachlor	10										
Aldrin	40										
Heptachlor Expoxide	16										
gamma-Chlordane	0.37										
alpha-Chlordane	0.37										
4,4'-DDE	0.33										
4,4'-DDD	0.33										
4,4'-DDT	0.33										
Dieldrin	0.0081										
Endosulfan I											
Endosulfan II											
Endrin	207										
Endrin Aldehyde											
Methoxychlor											
Endosulfan Sulfate											
Endrin Ketone											
Toxaphene											
VOLATILE ORGANIC CHEMICALS (EPA 8260B)	ug/kg										
1,1,1,2-Tetrachloroethane											
1,1,1-Trichloroethane											
1,1,2,2-Tetrachoroethane											
1,1,2-Trichoroethane											
1,1-Dichloroethane											
1,1-Dichloroethene											
1,1-Dichloropropene											
1,2,3-Trichlorobenzene											
1,2,3-Trichloropropane											
1,2,4-Trichlorobenzene	9200										
1,2,4-Trimethylbenzene											
1,2-Dibromo-3-chloropropane											
1,2-Dibromoethane											
1,2-Dichlorobenzene	1700										
1,2-Dichloroethane											
1,2-Dichloropropane	300										
1,3,5-Trimethylbenzene											
1,3-Dichlorobenzene											
1,3-Dichloropropane											
1,4-Dichlorobenzene	300										
2,2-Dichloropropane											
2-Butanone (Methyl Ethyl Ketone)											
2-Chloroethyl Vinyl Ether											
2-Chlorotoluene											
2-Hexanone											

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3[3]	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09
4-Chlorotoluene											
Acetone											
Benzene											
Bromobenzene											
Bromochloromethane											
Bromodichloromethane											
Bromoform											
Bromomethane											
Carbon Disulfide											
Carbon Tetrachloride											
Chlorethane											
Chlorobenzene											
Chloroform											
Chloromethane											
cis-1,2-Dichloroethylene											
trans-1,2-Dichloroethene											
cis-1,3-Dichloropropene											
Dibromochloromethane											
Dibromomethane											
Dichlorodifluoromethane											
Ethylbenzene											
Hexachlorobenzene	19										
Hexachlorobutadiene	600										
Iodomethane (Methyl Iodide)											
Isopropylbenzene											
m,p-Xylene											
Methylene Chloride											
Methyt-Butyl Ether											
Methyl Isobutyl Ketone											
Naphthalene											
n-Butylbenzene											
n-Propylbenzene											
o-Xylene											
p-Isopropyltoluene											
sec-Butylbenzene											
Styrene											
tert-Butylbenzene											
Tetrachloroethene	500										
Toluene											
trans-1,2-Dichloroethene											
trans-1,3-Dichloropropene											
Trichloroethene	2100										
Trichlorofluoromethane											
Vinyl Acetate											
Vinyl Chloride											

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3[3]	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg									
Naphthalene	561	22000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5
2-Methylnaphthalene	200		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5
1-Methylnaphthalene	na		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5
Acenaphthylene	200		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5
Acenpththene	300	41x10^6	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5
Fluorene	536	35x10^6	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5
Phenanthrene	1170		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**240**	<8.7	<8.5
Anthracene	845		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**39**	<8.7	<8.5
Fluoranthene	2230	29x10^6	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1700**	<8.7	<8.5
Pyrene	1520	21x10^6	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1400**	<8.7	<8.5
Benzo(a)anthracene	1050	2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1700**	<8.7	<8.5
Chrysene	1290	270000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**2400**	<8.7	<8.5
Benzo(b)fluoranthene		2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**3000**	<8.7	<8.5
Benzo(k)fluoranthene	13000	27000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**820**	<8.7	<8.5
Benzo(a)pyrene	1450	270	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1400**	<8.7	<8.5
Ideno(1,2,3-c,d)pyrene	100	2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1000**	<8.7	<8.5
Dibenz(a,h)anthracene	1300	270	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**520**	<8.7	<8.5
Benzo(g,h,i)perylene	300		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1300**	<8.7	<8.5
PETROLEUM HYDROCARBONS	ug/kg										
Diesel Range (NWTPH-Dx)			<32000								
Lube Oil Range (NWTPH-Dx)			<63000								
Gasoline (NWTPH-HCID)	22x10^6	22x10^6	<22000								
Diesel Fuel (NWTPH-HCID)	70x10^6	70x10^6	<56000								
Lube Oil (NWTPH-HCID)			<110000								
TPH-Gas (NWTPH-Gx)											
Oil & Grease (EPA 1664)											
% Moisture											

Table 5 Notes:

[1] Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.

[2] DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by ([a])

[3] Soil sample from boring for monitoring well; example MW1-S-3 is soil sample from MW1 boring taken from 3 feet depth below ground surface.

[4]Screening Level Values (SLVs) for water from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted yellow on the table.

[5]Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.

Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value. **Bolded** values are concentrations detected above the respective PQL.

Grey shaded cells are PQLs greater than JSCS SLV; Yellow shaded cells are detected concentrations that exceed JSCS screening level values. Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

Table 6 – Soil Analyses Borings – 2495 NW Nicolai Street

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12[3]	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg																
Antimony	64	410[a]																
Arsenic	7	1.7	<13	<13	<13	<13	<11	<11	<12	**17**	<13	<14	<13	<14	<14	<14	<14	<14
Beryllium	na	2000																
Barium	na	>100x10[3]	**220**	**200**	**170**	**190**	**110**	**110**	**160**	**210**	**210**	**160**	**210**	**220**	**180**	**180**	**170**	**150**
Cadmium	1	510	<0.67	<0.64	<0.65	<0.67	<0.57	<0.56	<0.62	**1.1**	<0.63	<0.68	<0.65	<0.68	<0.69	<0.68	<0.68	<0.68
Chromium (total)	111	180	**22**	**24**	**26**	**25**	**20**	**13**	**26**	**21**	**19**	**19**	**35**	**29**	**22**	**21**	**23**	**24**
Copper	149	38000																
Lead	17	800	**11**	**15**	**10**	**10**	**140**	**81**	**12**	**29**	**9.9**	**12**	**12**	**12**	**14**	**11**	**9**	**10**
Mercury	0.07	310	<0.33	<0.32	<0.32	<0.33	<0.28	<0.28	<0.31	<0.32	<0.32	<0.34	<0.32	<0.34	<0.35	<0.34	<0.34	<0.34
Nickel	48.6	20000																
Selenium	2	5100[a]	<13	<13	<13	<13	<11	<11	<12	<13	<13	<14	<13	<14	<14	<14	<14	<14
Silver	5	5100	<0.67	<0.64	<0.65	<0.67	<0.57	<0.56	<0.62	<0.65	<0.63	<0.68	<0.65	<0.68	<0.69	<0.68	<0.68	<0.68
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg																
Aroclor 1016	530	21000	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1221		620	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1232		620	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1242		740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1248	1500	740	<67	<64	<65	<67	**110**	**69**	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1254	300	740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1260	200	740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1262			<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1268			<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg	ug/kg																
alpha-BHC														<6.8	<6.9			
beta-BHC														<6.8	<6.9			
delta-BHC														<6.8	<6.9			
gamma-BHC (Lindane)	4.99													<6.8	<6.9			
Heptachlor	10													<6.8	<6.9			
Aldrin	40													<6.8	<6.9			
Heptachlor Expoxide	16													<6.8	<6.9			
gamma-Chlordane	0.37													<14	<14			
alpha-Chlordane	0.37													<14	<14			
4,4'-DDE	0.33													<14	<14			
4,4'-DDD	0.33													<14	<14			
4,4'-DDT	0.33													<14	<14			

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12[3]	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
Dieldrin	0.0081													<14	<14			
Endosulfan I														<6.8	<6.9			
Endosulfan II														<14	<14			
Endrin	207													<14	<14			
Endrin Aldehyde														<14	<14			
Methoxychlor														<14	<14			
Endosulfan Sulfate														<14	<14			
Endrin Ketone														<14	<14			
Toxaphene														<68	<69			
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg																
Naphthalene	561	22000	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
2-Methylnaphthalene	200		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
1-Methylnaphthalene	na		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Acenaphthylene	200		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Acenpththene	300	41x10^{6}	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Fluorene	536	35x10^{6}	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Phenanthrene	1170		<8.9	<8.5	<8.7	<8.9	<7.6	**7.7**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Anthracene	845		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Fluoranthene	2230	29x10^{6}	<8.9	<8.5	<8.7	<8.9	<7.6	**21**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Pyrene	1520	21x10^{6}	<8.9	<8.5	<8.7	<8.9	<7.6	**23**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(a)anthracene	1050	2700	<8.9	<8.5	<8.7	<8.9	<7.6	**10**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Chrysene	1290	270000	<8.9	<8.5	<8.7	<8.9	<7.6	**17**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(b)fluoranthene		2700	<8.9	<8.5	<8.7	<8.9	<7.6	**25**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(k)fluoranthene	13000	27000	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(a)pyrene	1450	270	<8.9	<8.5	<8.7	<8.9	<7.6	**20**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Ideno(1,2,3-c,d)pyrene	100	2700	<8.9	<8.5	<8.7	<8.9	<7.6	**17**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Dibenz(a,h)anthracene	1300	270	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(g,h,i)perylene	300		<8.9	<8.5	<8.7	<8.9	<7.6	**23**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
PETROLEUM HYDROCARBONS	ug/kg	ug/kg																
Diesel Range (NWTPH-Dx)							<28			<33				<34	<35			
Lube Oil Range (NWTPH-Dx)							<57			<65				<68	<69			
Gasoline (NWTPH-HCID)	22x10^{6}	22x10^{6}					<23x10^{3}			<26 x10^{3}				<27	<28			
Diesel Fuel (NWTPH-HCID)	70x10^{6}	70x10^{6}					<57 x10^{3}			<65 x10^{3}				<68	<69			
Lube Oil (NWTPH-HCID)							<110 x10^{3}			<130 x10^{3}				<140	<140			
TPH-Gas (NWTPH-Gx)																		
Oil & Grease (EPA																		

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12[3]	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
1664)																		
OTHER ANALYSES																		
TOC (Standard Method)																		
% Moisture	25		22	23	25								23	27	28	26	27	27

Table 6 Notes:
[1] Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.
[2] DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by ([a])
[3] Soil Boring number, with depth in feet depth below ground surface; example B-1-12 is soil sample from boring 1 taken from 12 feet depth below ground surface.
Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value.
Bolded values are concentrations detected above the respective PQL.
Grey shaded cells are PQLs greater than JSCS SLV.
Yellow shaded cells are detected concentrations that exceed JSCS screening level values.
Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

May 2009 – Stormwater Catch Basins Interim Sampling Investigation

The purpose of the stormwater catch basin assessment was to determine whether contaminants in sediments are entering the stormwater system and to help determine the analytical suite for stormwater contaminants of concern.

Some chemicals were not detected in catch basin sediment samples, but their MDLs exceed their SLVs. Some metals (antimony, cadmium, chromium, copper, lead, nickel, silver, and zinc) exceeded their SLVs in one or more catch basin samples. Chromium, copper, lead and mercury also exceeded bioaccumulation criteria in one or more samples. Manganese and selenium did not exceed SLVs in any samples. In general, no pattern was apparent linking the catch basin sample results to metal-specific processing areas of the Site. This is not unexpected considering that, throughout the site, operations are to accept scrap metals for cutting, sorting, and packaging for resale.

Di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected in all samples at concentrations that exceed the JSCS SLVs. Such phthalates are widespread and can be found in such products as adhesives and glues, building materials, personal care products, medical devices, detergents, packaging, waxes, paints, printing inks and coatings, pharmaceuticals, food products and textiles. The potential sources of phthalates at the Site were not identifiable and unknown. Such chemicals are not used at the site. The report is included in Appendix E. The analyses are summarized in Table 7.

Table 7 – Chemicals Detected in Catch Basin Sediments – 2495 NW Nicolai Street

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
Polychlorinated Biphenyls- Method 8082 (ug/kg dry)							
Aroclor 1016	530	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1221	na	<2310	<5530	<2880	<8660	<2190	<2880
Aroclor 1232	na	<1150	<2750	<1430	<4310	<1450	<1430
Aroclor 1242	na	2320	933	969	<861	11700	747
Aroclor 1248	1500	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1254	300	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1260	200	<1150	<2750	<3080	<4310	<2170	<1430
Semivolatile Organic Compounds – Method 8270C (mg/kg)							
Acenaphthene	0.3	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Acenaphthylene	0.2	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Anthracene	0.845	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(a)anthracene	1.05	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(a)pyrene	1.45	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(b)fluoranthene	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(ghi)perylene	0.3	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(k)fluoranthene	13	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzoic Acid	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Benzyl alcohol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Bromophenyl phenyl ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Butyl benzyl phthalate	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Chloro-3-Methylphenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Chloroaniline	na	<59.8	<59.1	<59.9	<59.8	<59.4	<59.1
Bis(2-chloroethoxy)methane	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Bis(2-chloroethyl)ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Bis(2-chloroisopropyl)ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Chloronaphthalene	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Chlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Chlorophenyl phenyl ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Chrysene	1.29	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Di-n-butyl phthalate	0.1/0.06	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Di-n-octyl phthalate	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Dibenzo(a,h)anthracene	1.3	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Dibenzofuran	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
1,2-Dichlorobenzene	1.7	<29.9	<29.6	<30	<29.9	<29.7	<29.6
1,3-Dichlorobenzene	0.3	<29.9	<29.6	<30	<29.9	<29.7	<29.6
1,4-Dichlorobenzene	0.3	<29.9	<29.6	<30	<29.9	<29.7	<29.6
3,3'-Dichlorobenzidine	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
2,4-Dichlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Diethyl phthalate	0.6	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2,4-Dimethylphenol	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Dimethyl phthalate	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4,6-Dinitro-2-methylphenol	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
2,4-Dinitrophenol	na	<59.8	<59.1	<59	<59.8	<15.4	<59.1
2,4-Dinitrotoluene	na	<15	<14.8	<15	<15	<14.9	<14.8
2,6-Dinitrotoluene	na	<15	<14.8	<15	<15	<14.9	<14.8
Bis(2-ethylhexyl)phthalate	0.8/0.33	551	38	34.9	23.4	570	65.8
Fluoranthene	2.23/37	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Fluorene	0.536	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Hexachlorobenzene	0.1/0.019	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Hexachlorobutadiene	0.6	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Hexachlorocyclopentadiene	0.4	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Hexachloroethane	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Indeno(1,2,3-cd)pyrene	0.1	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Isophorone	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Methylnaphthalene	0.2	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Methylphenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
3-,4-Methylphenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Naphthalene	0.561	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Nitroaniline	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
3-Nitroaniline	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
4-Nitroaniline	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Nitrobenzene	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Nitrophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Nitrophenol	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
N-Nitrosodi-n-propylamine	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
N-Nitrosodiphenylamine	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Pentachlorophenol	1/0.025	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Phenanthrene	1.17	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Phenol	0.05	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
Pyrene	1.52/1.9	<9.87	<9.75	<9.89	<9.87	10	<9.75
1,2,4-Trichlorobenzene	9.2	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2,4,5-Trichlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2,4,6-Trichlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Polynuclear Aromatic Compounds – Method 8270M-SIM (ug/kg dry)							
2-Methylnaphthalene	0.2	1010	<692	<1550	<866	<1450	<716
Acenaphthene	0.3	2190	<692	<1550	<866	<1450	<716
Acenaphthylene	0.2	<576	<692	<1550	<866	<1450	<716
Anthracene	0.845	1550	1260	<1550	<866	<1450	<716
Benzo(a)anthracene	1.05	4840	3690	6770	5010	6950	1450
Benzo(a)pyrene	1.45	2620	2220	3080	2200	3980	801
Benzo(b)fluoranthene	na	7530	6930	12400	9030	8420	2260
Benzo(ghi)perylene	0.3	3170	2680	4940	3260	4160	1220
Benzo(k)fluoranthene	13	4520	4040	5810	4770	4740	1240
Chrysene	1.29	13400	11600	20600	14800	17100	4250
Dibenzo(a,h)anthracene	1.3	863	747	<1550	914	<1450	<716
Fluoranthene	2.23/37	18200	16900	21300	17000	20400	5080
Fluorene	0.536	1010	<692	<1550	<866	<1450	<716
Ideno(1,2,3-cd)pyrene	0.1	2620	2290	3730	2530	3290	890
Naphthalene	0.561	2540	<692	<1550	<866	<1450	<716
Phenanthrene	1.17	7500	5850	6110	3250	9290	1700
Pyrene	1.52/1.9	12900	10100	16000	12000	20800	3620
Organochlorine Pesticides – Method 8081A (ug/kg dry)							
Aldrin	0.04	<11.6	<13.8	<15.5	<25.9	<43.6	<21.4
alpha-BHC	na	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
beta-BHC	na	<17.2	<13.8	<23.1	<17.3	<145	<14.4
delta-BHC	na	<17.2	<13.8	<23.1	<17.3	<21.7	<14.4
gamma-BHC (Lindance)	0.00499	<11.6	<13.8	<15.5	<17.3	<29.1	<14.4
gamma-Chlordane	na	<11.6	<13.8	<15.5	<17.3	<21.7	<14.4
alpha-Chlordane	na	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
Chlordane (tech)	0.0176/ 0.00037	<259	<310	<347	<388	<325	<322
4,4'-DDD	0.028/ 0.00033	<17.2	<27.7	<15.5	<25.9	<43.6	<14.4
4,4'-DDE	0.0313/ 0.00033	<17.2	<20.6	<15.5	<17.3	<21.7	<14.4

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
4,4'-DDT	0.0629/ 0.00033	<46.2	<41.5	<23.1	<25.9	<43.6	<28.7
Dieldrin	0.0618/ $8.1x10^{-6}$	<34.7	<13.8	<15.5	<17.3	<43.6	<14.4
Endosulfan I	na	<29	<13.8	<15.5	<17.3	<14.5	<14.4
Endosulfan II	na	<11.6	<20.6	<15.5	<17.3	<14.5	<14.4
Endosulfan sulfate	na	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
Endrin	0.207	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
Endrin aldehyde	na	<40.5	<27.7	<15.5	<34.7	<58.1	<21.4
Endrin ketone	na	<23.1	<41.5	<15.5	<25.9	<58.1	<21.4
Heptachlor	0.01	<17.2	<13.8	<15.5	<17.3	<145	<14.4
Heptachlor epoxide	0.016	<11.6	<13.8	<15.5	<17.3	<21.7	<14.4
Methoxychlor	na	<34.7	<69.1	<38.9	<52	<14.5	<43.1
Toxaphene	na	<345	<413	<463	<517	<434	<429
Total Metals – Method6000/7000 Series (Mercury – Method 7471A) (mg/kg dry)							
Antimony	64	20.8	17.6	7.72	9.04	471	15
Arsenic	33/7[3]	8.47	<10.2	8.9	17.1	<104	8.02
Cadmium	4.98/1	18.6	7.22	3.34	4.38	21.2	6.52
Chromium	111	1320	545	694	238	802	838
Copper	149	4820	3780	1620	1910	80500	10300
Lead	128/17	867	1090	618	553	2880	3320
Manganese	1100	891	510	464	301	797	1010
Mercury	1.06/0.07	0.359	0.241	0.493	0.522	1.71	1.52
Nickel	48.6	900	500	364	182	419	847
Selenium	5/2	<0.838	<1.02	<1.11	<1.3	1.4	<1.05
Silver	5	16.8	8.39	3.1	2.91	23.7	16.6
Zinc	459	2310	1010	561	840	37500	4260
Phthalates – Method 8270-SIM (ug/kg dry)							
Dimethyl phthalate	na	<2300	<2750	<6190	<3460	<5810	<2860
Diethyl phthalate	0.6	<2300	<2750	<6190	<3460	<5810	<2860
Di-n-butyl phthalate	0.1/0.06	4520	4050	<6190	<3460	10500	7360
Butyl benzyl phthalate	na	<115000	8560	6550	3550	<290000	8500
Bis(2-ethylhexyl)phthalate	0.8/0.33	189000	209000	288000	161000	2230000	87500
Di-n-octyl phthalate	na	<15000	26400	<61900	7930	617000	8340
Other Parameters							
Solids –NCA SOP (% by weight)	na	57.9	48.4	43.2	38.6	46	46.6

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
TOC – Method 9060 (mg/kg)	na	71000	87000	110000	61000	140000	120000

Table 7 Notes:

[1] Screening Criteria for sediment from DEQ Portland Harbor Joint Source Control Strategy (December 2005), Table 3-1

[2] Catch basins sampled are shown on the site map of Figure 2

[3] 33/7 denotes chemicals with both toxicity and bioaccumulation screening level values and analytical results are screened against both values

Cells shaded green contaminant concentration exceeds JSCS SLV

Cells shaded blue contaminant concentration exceeds JSCS SLV and bioaccumulation criteria

Cells shaded orange contaminant concentration exceeds bioaccumulation criteria but not JSCS SLV

Cells shaded gray detection limit for contaminant exceeds screening criteria

July 2009 – Stormwater Catch Basins Cleanout

The purpose of the catch basin cleanout is to assess the integrity of all stormwater catch basins, with emphasis on CB-5. Cleanout was performed by vacuuming each catch basin. During cleanout a video survey was performed within the line leading from catch basin CB-5 to the connection with the manhole in NW 25th Place to determine the integrity of the discharge pipe. The pipe has since been sealed and abandoned. All of the catch basins have been cleaned and new filters added, one replaced by a new catch basin, and all are maintained under an updated BMP maintenance program. See Figure 2 for the renumbering of catch basins.

August 2009 – Sediment Sampling of Roofs and Cobblestone Paving

The purpose of the investigation was to determine whether airfall particulates from Site activities or accumulated debris on pavement entering the stormwater system are potential the sources of PCBs detected in previous stormwater catch basin sediment samples. Roof sample locations were selected in the most likely locations to identify possible airborne sources that may have deposited on the roofs, and sediment that could eventually be deposited in catch basin CB-5, located in NW 25th Avenue.

Roof samples were taken by wipe sampling (sometimes referred to as swipe sampling). Four discrete wipe samples were collected from the roofs at locations where sediment had collected in depressions on the roofs. The samples were taken by first applying a hexane solvent (provided by the laboratory) to a new sterile gauze pad. The moistened gauze pad was rubbed thoroughly over a lOO-cm^2 area (delineated by a template) of the sample surface to obtain the sample.

Roadway composite sediment samples were collected using a scraping technique with dedicated stainless steel trowels. Samples were collected by loosening the sediment which had collected on top of the mortar between the cobblestone bricks. The roadway sampling areas scraped were variable, depending upon the amount of sediment present. PCBs were not detected in the samples taken from the roofs. PCBs were detected in all NW 25th Avenue sediment scrape samples (S-1, S-2 and S-3). The analytical results indicated that roadway sediments trapped between the cobblestones of NW 25th Avenue could be a source of PCBs. The report is included in Appendix F. The analyses are summarized in Table 8.

Table 8 – Roof and Cobblestone PCB Sample Analyses – 2495 NW Nicolai Street

CHEMICAL	EPA/DEQ CRITERIA	DEQ JSCS CRITERIA	R-1	R-2	R-3	R-4	S-1 Onsite	S-1 TestAmerica	S-2	S-3
	ug/kg	*ug/kg*	*ug/ 100 cm²*	*ug/ 100 cm²*	*ug/ 100 cm²*	*ug/ 100 cm²*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*
Aroclor 1016	21,000	530	<2.0	<2.0	<2.0	<2.0	<510	<77	<520	<51
Aroclor 1221	620	na	<2.0	<2.0	<2.0	<2.0	<510	<190	<520	<51
Aroclor 1232	620	na	<2.0	<2.0	<2.0	<2.0	<510	<170	<520	<51
Aroclor 1242	740	na	<2.0	<2.0	<2.0	<2.0	**2,000**	<50	**2,300**	<51
Aroclor 1248	740	1500	<2.0	<2.0	<2.0	<2.0	<510	<31	<520	<51
Aroclor 1254	740	300	<2.0	<2.0	<2.0	<2.0	<510	**3,700**	<520	**200**
Aroclor 1260	740	200	<2.0	<2.0	<2.0	<2.0	**780**	<72	<520	<51

Table 8 Notes
Non-detected shown as less than practical quantitation limit (e.g., <2.0); na = no criteria; 100 cm2 = 10 cm by 10 cm template.
Sample S-1 was split between Onsite Environmental and TestAmerica labs.
EPA Superfund Regional Human Health Screening Levels Sept. 2008
DEQ does not have individual Aroclor RBC values.
Portland Harbor Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) for stormwater pathway.
Method Detection Limit; Reporting Limits for all PCBs was 240 µg/kg.

January 2010 – Asphalt and Soil Sampling Investigation

An investigation was made to collect surface asphalt chips within the warehouse and surrounding paved areas and analyze the samples for PCBs. Thirteen asphalt samples, S-1 through S-12 and AS-1, were collected and analyzed for PCBs. Where the limestone cobblestones were not exposed at the surface, the asphalt surface of approximately 1 inch thick was loosened from the surface to the top of the cobblestones. At each soil sample location, approximately one cobblestone was removed with an electric pneumatic drill prior to collecting soil samples with a hand auger from 5 to 11 inches and 18 to 24 inches depth below ground surface in each boring. The cobblestones measured approximately 4.25 inches wide by 6 inches long by 4.5 inches thick. No cracks were observed within the cobblestones or mortar between them.

At each soil sample location, the cobblestones were underlain by damp, medium brown (5 YR ¾) silty gravels to depths of approximately 20 inches where medium brown (5 YR ¾) silty fine-medium sand was encountered. The 2 inch diameter by 6 inch long core sampler attached to the hand auger was pushed to the upper sampling depths of 5 to 11 inches. The 3.25 inch diameter regular auger was then attached to the auger and the soil from 11 inches to 18 inches was removed. The core sampler was then reattached to the auger and the lower soil sample was obtained by pushing the core sampler from 18 to 24 inches depth. The upper soil sample, labeled “3/9”, was collected within the silty gravels underlying the cobblestones, and the lower soil sample, labeled “18/24”, was collected within silty sand which could possibly be historic dredge fill.

Asphalt samples were collected by loosening the asphalt from the surface to approximately 0.25 inches deep with clean chisels. Nine cement and asphalt samples and duplicates were collected at locations S-13 through S-19. The samples were collected by loosening the concrete or asphalt from the surface to approximately 0.25 inches deep with an electric pneumatic hammer chisel.

PCBs as Aroclors were detected including 1242, 1254, and 1260, and resulting concentrations compared to for the stormwater pathway. Aroclor 1254 was detected at concentrations above the SLVs in surface samples S-16 (interior cement), S-17 (interior cement), S-18 (interior cement) and duplicate sample S-19B (interior cement). Aroclor 1260 was detected at concentrations above JSCS SLVs in surface sample S-18 (interior cement). Aroclors 1016, 1221, 1232, 1248, 1262 and 1268 were not detected in any samples. Calbag scrap acceptance policy is not to accept materials that are known to contain PCBs; therefore the source of the PCBs detected onsite is unknown. The report is included in Appendix G. The analyses are summarized in Table 9.

Table 9 – Asphalt and Soil Sample Analyses – 2495 NW Nicolai Street

CHEMICAL	**DEQ JSCS**	**S-1**	**S-2**	**S-3**	**S-4**	**S-5**	**S-6**	**S-7**	**S-8**	**S-9**	**S-10**	**S-11**	**S-12**	**AS-1**	**B-1-3/9**	**B-1-18/24**	**B-2-3/9**	**B-2-18/24**	**B-3-3/9**	**B-3-18/24**
Aroclor 1016	530	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1221	nv	ND< 135	ND< 272	ND< 68	ND< 68.7	ND< 271	ND< 28	ND< 27.3	ND< 67.4	ND< 339	ND< 1350	ND< 68	ND< 137	ND< 271	ND< 14.1	ND< 15.2	ND< 79.8	ND< 17.4	ND< 15.8	ND< 17.4
Aroclor 1232	nv	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1242	nv	**391**	**443**	**92.5**	ND< 34.2	**468**	ND< 13.9	**14.0**	**54.1**	**813**	**4060**	**59.9**	**632**	**777**	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1248	1500	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1254	300	**237**	**487**	**70.8**	**117**	ND< 135	**16.4**	ND< 13.6	**56.5**	**436**	ND< 670	**88.8**	**600**	**874**	**7.66**	ND< 7.53	**209**	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1260	200	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1262	nv	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	**260**	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	**43.7**	**200**	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1268	nv	ND< 67.3	ND< 135	ND< 33.8	**47.1**	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67

Table 9 Notes
All values µg/kg; ND – not detected at or above the method reporting limit shown; nv – no value available; shaded – exceeds JSCS criteria; bold – detected;
hand auger boring 3/9 samples composited from 5 to 11 inches below top of asphalt and 18/24 samples composited from 18 to 24 inches below top of asphalt.

December 2009 – Asphalt and Cement Surface Sampling

In December 2009, asphalt and cement surface chip samples were collected and sampled. Four cement samples at 0 to 0.25 inches were collected from the pad foundation of the warehouse. One cement and two asphalt samples at 0 to 0.25 inches were collected from the roadways south and east of the warehouse. Each sample was analyzed for PCBs and the results screened against JSCS SLV for stormwater pathway. Nine cement and asphalt samples were collected at locations S-13 through S-19. The report is included in Appendix H. The analyses are summarized in Table 10.

Table 10 – Asphalt and Cement Analyses – 2495 NW Nicolai Street

CHEMICAL	DEQ JSCS	S-13 exterior cement	S-14A exterior asphalt	S-14B exterior asphalt	S-15 exterior asphalt	S-16 interior cement	S-17 interior cement	S-18 interior cement	S-19A interior cement	S-19B interior cement
Aroclor 1016	530	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1221	nv	ND<7.76	ND<27.9	ND<28.3	ND<14.1	ND<277	ND<140	ND<282	ND<70.1	ND<279
Aroclor 1232	nv	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1242	nv	**9.44**	**58.6**	**43.2**	**28.8**	**1300**	**787**	**1560**	**756**	**901**
Aroclor 1248	1500	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1254	300	**20.8**	**62.8**	**69.6**	**33.9**	**685**	**545**	**961**	**273**	**349**
Aroclor 1260	200	**10.8**	**21.6**	**21.6**	**12.6**	**217**	**167**	**278**	**78.0**	ND<139
Aroclor 1262	nv	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1268	nv	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139

August 2010 – Stormwater Line Video

An inline video survey was made from the oil-water separator near catch basin CB-4 to the outlet junction with the combined main line in NW 25th Place to determine its integrity. The line, underlying the foundation footing of the adjacent building, was later abandoned by cement backfill in September 2012 during the stormwater upgrade construction.

September 2010 – PCB Surface Washing Pilot Study

At the request of DEQ, a pilot study was conducted to evaluate the effectiveness of cleaning concrete and asphalt surfaces for PCBs using a comparative analysis between water, water plus detergent, and a surfactant.

Field procedures included collecting sets of two discrete samples from each of three test areas on the asphalt and concrete surfaces, one before and one after each test from near surface and shallow depth. The test areas were then treated with three wash mixes: water, water and detergent, and water and surfactant (Capsur). Asphalt and concrete samples were analyzed for PCBs as Aroclors and compared to JSCS SLVs.

Only Aroclor 1254 was detected in the pilot study. The highest concentration of Aroclor 1254 (628 ug/kg) was detected in sample CS-5, a sample of concrete pre-test water and detergent. The lowest concentration of Aroclor 1254 (5.18 ug/kg) was detected in sample CS-11, a concrete pre-test Capsur sample.

Washing the surfaces of asphalt and concrete with water generally did not reduce the concentrations of PCBs. In the water washing method, the PCB concentrations decreased only in one sample of asphalt at 1.5 inches depth. Washing the surface of the asphalt test area with a water and detergent mixture produced indeterminate results. The PCB concentrations at the asphalt surface increased and the PCB concentrations at 1.5 inch depth decreased. For the concrete surface, the PCB concentrations slightly decreased at the surface and at 3 inches depth. Washing the surface of the asphalt test area with the Capsur appeared to reduce the PCB concentrations at both the 0 to 1 inch and 1.5 inch depths. Washing the surface of the concrete test area produced indeterminate results with some results appearing to increase in the post-test samples and other samples appearing to decrease.

The sampling results also indicate the relatively low levels of PCBs existing within the asphalt and concrete prior to testing. Detection limits achieved for the asphalt and concrete analyses were generally below about 66 μg/kg, with only a small percentage between 100 to 134 μg/kg, and also a small percentage below about 7 μg/kg. While most detection limits achieved were not below the DEQ-requested 10 μg/kg, all were well below the JSCS screening criteria for soil/stormwater sediment toxicity. The report is included in Appendix I. The analyses are summarized in Table 11.

Table 11 – PCB Surface Washing Pilot Study Sample Analyses – 2495 NW Nicolai Street

Arolclor # Values in **ug/kg**			1016 Pre-Test	1016 Post-Test	1221 Pre-Test	1221 Post-Test	1232 Pre-Test	1232 Post-Test	1242 Pre-Test	1242 Post-Test	1248 Pre-Test	1248 Post-Test	1254 Pre-Test	1254 Post-Test	1260 Pre-Test	1260 Post-Test	1262 Pre-Test	1262 Post-Test	1268 Pre-Test	1268 Post-Test
ASPHALT																				
AS-1	Water	1”	ND< 26.5		ND< 53.3		ND< 26.5		**164**		ND< 26.5		**81.8**		ND< 26.5		ND< 26.5		ND< 26.5	
AS-2	Water	1.5”	ND< 26.5		ND< 53.2		ND< 26.5		ND< 26.5		ND< 26.5		**42.2**		ND< 26.5		ND< 26.5		ND< 26.5	
AS-3	Water	1”		ND< 52.3		ND< 105		ND< 52.3		**246**		ND< 52.3		**165**		ND<52.3		ND< 52.3		ND< 52.3
AS-4	Water	1.5”		ND< 26.6		ND< 53.5		ND< 26.6		ND< 26.6		ND< 26.6		**35.4**		ND<26.6		ND< 26.6		ND< 26.6
AS-5	Spic n Span	1”	ND< 52.3		ND< 105		ND< 52.3		**214**		ND< 52.3		**132**		ND< 52.3		ND< 52.3		ND< 52.3	
AS-6	Spic n Span	1.5”	ND< 26.6		ND< 53.5		ND< 26.6		ND< 26.6		ND< 26.6		**104**		ND< 26.6		ND< 26.6		ND< 26.6	
AS-7	Spic n Span	1”		ND< 66.6		ND< 134		ND< 66.6		**331**		ND< 66.6		**226**		ND<66.6		ND< 66.6		ND< 66.6
AS-8	Spic n Span	1.5”		ND< 26		ND< 52.3		ND< 26		ND< 26		ND< 26		**91.8**		ND<26		ND< 26		ND< 26
AS-9	Capsur	1”	ND< 65.9		ND< 133		ND< 65.9		**338**		ND< 65.9		**249**		ND< 65.9		ND< 65.9		ND< 65.9	
AS-10	Capsur Duplicate	1”	ND< 66.3		ND< 133		ND< 66.3		**331**		ND< 66.3		**222**		ND< 66.3		ND< 66.3		ND< 66.3	
AS-11	Capsur	1.5”	ND< 53.1		ND< 107		ND< 53.1		ND< 53.1		ND< 53.1		**69.5**		ND< 53.1		ND< 53.1		ND< 53.1	
AS-12	Capsur Duplicate	1.5”	ND< 53.1		ND< 107		ND< 53.1		ND< 53.1		ND< 53.1		**62.2**		ND< 53.1		ND< 53.1		ND< 53.1	
AS-13	Capsur	1”		ND< 65.4		ND< 132		ND< 65.4		**332**		ND< 65.4		**245**		ND<65.4		ND< 65.4		ND< 65.4
AS-14	Capsur Duplicate	1”		ND< 65		ND< 131		ND< 65		**279**		ND< 65		**196**		ND<65		ND< 65		ND< 65
AS-15	Capsur	1.5”		ND< 26.6		ND< 53.5		ND< 26.6		ND< 26.6		ND< 26.6		**32.1**		ND<26.6		ND< 26.6		ND< 26.6
AS-16	Capsur Duplicate	1.5”		ND< 26.3		ND< 52.9		ND< 26.3		ND< 26.3		ND< 26.3		**32.7**		ND<26.3		ND< 26.3		ND< 26.3

Arolclor # Values in **ug/kg**			1016 Pre-Test	1016 Post-Test	1221 Pre-Test	1221 Post-Test	1232 Pre-Test	1232 Post-Test	1242 Pre-Test	1242 Post-Test	1248 Pre-Test	1248 Post-Test	1254 Pre-Test	1254 Post-Test	1260 Pre-Test	1260 Post-Test	1262 Pre-Test	1262 Post-Test	1268 Pre-Test	1268 Post-Test
CONCRETE																				
CS-1	Water	1”	ND<66.4		ND<134		ND<66.4		**227**		ND<66.4		**200**		ND<66.4		ND<66.4		ND<66.4	
CS-2	Water	3”	ND<33.1		ND<66.6		ND<33.1		**50.6**		ND<33.1		**91.1**		ND<33.1		ND<33.1		ND<33.1	
CS-3	Water	1”		ND<66.3		ND<133		ND<66.3		**358**		ND<66.3		**400**		ND<66.3		ND<66.3		ND<66.3
CS-4	Water	3”		ND<66.6		ND<134		ND<66.6		**189**		ND<66.6		**294**		ND<66.6		ND<66.6		ND<66.6
CS-5	Spic n Span	1”	ND<66.2		ND<133		ND<66.2		**108**		ND<66.2		**628**		ND<66.2		ND<66.2		ND<66.2	
CS-6	Spic n Span	3”	ND<6.64		ND<13.4		ND<6.64		ND<6.64		ND<6.64		**43.7**		ND<6.64		ND<6.64		ND<6.64	
CS-7	Spic n Span	1”		ND<66.3		ND<133		ND<66.3		**98.4**		ND<66.3		**353**		ND<66.3		ND<66.3		ND<66.3
CS-8	Spic n Span	3”		ND<3.33		ND<6.69		ND<3.33		ND<3.33		ND<3.33		ND<3.33		ND<3.33		ND<3.33		ND<3.33
CS-9	Capsur	1”	ND<65.8		ND<132		ND<65.8		**224**		ND<65.8		**355**		ND<65.8		ND<65.8		ND<65.8	
CS-10	Capsur Duplcate	1”	ND<65.5		ND<132		ND<65.5		**264**		ND<65.5		**333**		ND<65.5		ND<65.5		ND<65.5	
CS-11	Capsur	3”	ND<3.31		ND<6.67		ND<3.31		**5.18**		ND<3.31		**13.3**		ND<3.31		ND<3.31		ND<3.31	
CS-12	Capsur Duplicate	3”	ND<3.31		ND<6.65		ND<3.31		**11**		ND<3.31		**28.8**		ND<3.31		ND<3.31		ND<3.31	
CS-13	Capsur	1”		ND<66.2		ND<133		ND<66.2		**354**		ND<66.2		**387**		ND<66.2		ND<66.2		ND<66.2
CS-14	Capsur Duplicate	1”		ND<66.5		ND<134		ND<66.5		**210**		ND<66.5		**233**		ND<66.5		ND<66.5		ND<66.5
CS-15	Capsur	3”		ND<3.28		ND<6.59		ND<3.28		**9.02**		ND<3.28		**14.9**		ND<3.28		ND<3.28		ND<3.28
CS-16	Capsur Duplicate	3”		ND<3.28		ND<6.59		ND<3.28		**10.9**		ND<3.28		**18.4**		ND<3.28		ND<3.28		ND<3.28

April 2011– Focused Feasibility Study

A Focused Feasibility Study (FFS) was completed in consultation with DEQ and included the development of focused remedial alternatives and cost data. The FFS evaluated a range of remedial alternatives including source control measures and presented a recommended alternative. The FFS addressed exposed PCB-affected surfaces, including pavement and concrete floors, identified by the source control evaluation. The results of Site soil and groundwater sampling as part of an overall site investigation were included. The report is included in Appendix J.

A remedial activity included the modification to the CB-5 area, required as a Stormwater Source Control Mitigation Measure by DEQ, and consisted of abandoning and plugging existing discharge lines from CB-5, installing a new discharge line leading from CB-5 to the oil/water separator, and replacing CB-5 with a larger catch basin. A new treatment system was also constructed downstream of the existing oil/water separator, which provides removal of PCBs in stormwater prior to discharge to the City's combined gravity main within NW 25th Place. The existing discharge line connecting the oil/water separator to the main line in NW 25th Place was also replaced with a larger-diameter pipe to accommodate increased flows. Additional construction activities were completed including the asphalt repaving of NW 25th Avenue to serve as a cap on previous asphalt and cobblestone potentially containing PCBs. Soil samples were collected and analyzed from the new trench between CB-4 and the treatment system (see Appendix K). The stormwater systems components are shown in Figure 4.

January 2013 – Beneficial Water Use Determination

A beneficial water use determination study was completed including a conceptual site model depicting the sources of contamination, contaminant release and transport mechanisms, exposure media, and exposure routes to particular types of receptors. The chemicals of interest (COIs) have been identified as metals (chromium, arsenic, lead, cadmium), PCBs, phthalates, and petroleum products such as oil and grease. These constituents were introduced onto the site likely as a result of debris accumulation from the movement and handling of scrap metal through facility related operations.

There are no complete pathways at the site from soil or surface water to ecological receptors, or from soil to groundwater for human receptors. No surface water bodies are present onsite. Potentially contaminated surface water runoff is collected and directed into two on-site treatment systems or discharged into the City's stormwater main lines which are directed to City treatment plants. The site is an active industrial facility with frequent heavy equipment movement in the open paved areas, therefore there is no soil exposed for contact with ecological receptors.

Groundwater may potentially be contaminated through leaching of contaminants in soil, however the site is completely covered with asphalt, concrete, and buildings and no soil is exposed The site does not contain dry wells and all stormwater is collected, treated and discharged offsite. The depth to groundwater is over 40 feet below ground surface, which is deeper than a typical 15 foot depth for shallow excavation activity. Therefore, the leaching pathway from subsurface soil to groundwater is likely incomplete.

Groundwater beneath the site flows northward and discharges to the Willamette River at a point ½ mile or more northeast of the site.

There are no potable water wells or surface water bodies on the site. The beneficial uses of water in the general region of the site are limited to industrial ground water wells and recharge to the Willamette River. There is no current or planned future use of groundwater onsite as all water is provided by the City. The report is included in Appendix M.

4 POTENTIAL SOURCES AND CONTAMINANTS OF INTEREST

In early 2000 the City of Portland initiated an investigation of potential upland sources of pollution to the Willamette River in what would become, later that year, the Portland Harbor Superfund Site (City of Portland, 2013). The objective was to identify potential sources of pollution to the City stormwater conveyance lines that discharge to the Willamette River. Upland areas surrounding the Portland Harbor site are divided into basins associated with specific City stormwater outfalls. The Calbag operated facilities are located at the southern-most edge of Basin 16 (see City Outfall Map at
http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/docs/MilestoneRpt1009Figure1.pdf).

Discharge of stormwater from Basin 16 is via Outfall 16 which is located at about River Mile 9.7 approximately 1300 feet due north of the facility (City of Portland, 2013). The Basin 16 stormwater conveyance system consists of three major branches: the southern branch originating north of the 2495 Calbag facility, the central branch parallel to NW Yeon Avenue, and the northern branch parallel to NW Front Avenue. Land use zoning in Basin 16 is mixed but primarily heavy industry with light industry, commercial and major transportation (NW Yeon Avenue corridor).

4.1 Outfall Sediment Data

The City's stormwater basin investigation included sampling rain-event and dry weather stormwater flows and solids within the City's stormwater conveyance lines. Sampling was also conducted at the connection with industrial properties that discharge to the City's stormwater lines. Results of the stormwater sampling indicated that pollutants associated with stormwater discharge included PCBs, PAHs and metals. Certain sites within Basin 16 were identified by the City as potential sources of pollution via the stormwater pathway to the Portland Harbor site. Based on results of the stormwater lines investigation, shallow groundwater plumes were not identified near stormwater lines, therefore the City concluded that stormwater lines in Basin 16 do not represent a preferential pathway for transport of shallow groundwater contamination to the Willamette River.

In late 2007 and early 2008 inline sampling stormwater solids sampling was conducted at select locations in the southern portion of Basin 16, including at the facility. Results of this inline sampling indicated that the facility was a contaminant source for PCB and metals, particularly copper, to the Basin 16 stormwater discharge.

4.2 Potential Contaminant Sources

Sources of pollution at upland sites associated with the Portland Harbor site may be either media sources or operational sources (DEQ, 2010). Previous investigations at the facility have investigated soil and groundwater, as well as potential contamination present in above ground areas associated with daily business operations. A NFA determination was issued by DEQ for the facility (DEQ, 2013) and concluded that the facility is protective under Oregon cleanup regulations.

Results of historical site investigations at the facility did not identify significant soil or groundwater contamination that could serve as source of contamination to the City stormwater lines as preferential pathways to the Willamette River.

Contaminants were detected in soil at low concentrations and either did not exceed human health or ecological screening values, or did exceed screening values but were located under existing buildings. Contaminants detected in groundwater did not exceed screening values except for chloroform but this contaminant was not considered significant to human health or the stormwater pathway.

Results of additional investigation of above ground areas did identify sources of contamination associated with operational activities that may be transported to the Willamette River via the stormwater pathway. Above ground investigation included catch basin sediment sampling, stormwater line inspection, and outdoor pavement, indoor flooring and roof sampling. The main potential sources of contamination for the stormwater pathway include: areas of recycle materials sorting, older pavement (cobblestones) in outdoor traffic areas, and exposed recycle material storage areas. Calbag operations to intake, sort, manage and ship metals for recycling are conducted both indoors and outdoors and are shown on the map of Figure 11.

Calbag instituted several source control measures in response to identification of the facility as an upland source of PCB contamination to the City stormwater discharge from Basin 16. The source control measures included:

- Installation of two stormwater pre-treatment systems,
- Cleaning catch basins and lines and installation of protective devices in catch basins,
- Upgrading the onsite stormwater lines and catch basins,
- Capping with an additional layer of asphalt and replacement of concrete paving in areas of the facility where PCBs were detected at pavement surface,
- Installation of covering for metals processing and storage areas, and
- Improved housekeeping BMPs.

Source control measures that have been implemented by Calbag are discussed in a following Section.

4.3 Contaminants of Interest

Contaminants of interest (COIs) for the source control evaluation at the facility is a list of chemical analytes included in stormwater analyses conducted as part of the source control evaluation sampling activities. The list of chemicals analyzed for stormwater sampling was developed based upon the result of historic City inline stormwater flow and solids sampling, chemicals detected in onsite catch basin sediment, and knowledge of Calbag operations.

Source control evaluation COIs include the following chemical groups. Contaminants within these chemical groups have not been screened for non-detects, background or concentration.

- Total Metals using EPA method 200.8 (aluminum, antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, zinc)
- PCBs as Aroclors using EPA 608 (1016, 1221, 1242, 1248, 1254, 1260)
- Semivolatile Organic Compounds using EPA 625 (includes phenols and PAHS)
- Organochlorine Pesticides using EPA 608
- Oil & Grease using EPA 1664
- Total Suspended Solids using SM 2540D
- Total Organic Carbon using EPA 410.4

Stormwater monitoring analytes, versus soil and groundwater investigation COIs, are proposed as the source control evaluation COIs for several reasons.

- The site is completely covered with buildings or asphalt and concrete paving so any contamination that may be present in the subsurface would not be exposed to erosion and potential transport to the stormwater system.
- The facility onsite stormwater system was upgraded by replacing older catch basins and new larger conveyance lines in the central portion of the property, reducing the potential for contamination to enter the catch basins or conveyance lines from the subsurface.
- Stormwater pre-treatment systems have been installed at the facility to manage stormwater in the surface drainages areas DA3/6 (northern) and DA4 (western) portions of the property prior to discharge to the City stormwater system and discharge to the Willamette River. Stormwater from the rest of the property are discharged to the City sewer system which receives treatment prior to discharge to the Willamette River.

- No significant sources of soil or groundwater contamination were identified as a result of the soil and groundwater investigation of the site. This is consistent with the finding of the City that no shallow groundwater plumes of contamination were identified near City stormwater lines which could potentially serve as preferential pathways form contamination migrating to the Willamette River (City of Portland, 2013). Therefore, potential sources of contamination to the stormwater system are above ground and associated with operational activities.

5 ONGOING STORMWATER MANAGEMENT MEASURES

The Best Management Practices (BMPs) currently implemented as ongoing stormwater management measures at the facility are discussed in this Section.

Minimize Exposure:

- All scrap processing activities are conducted indoors or under cover.
- Exposed, outdoor storage is restricted to materials with minimal potential for contaminating stormwater (e.g., aluminum, stainless steel, steel).
- Drop boxes containing potentially contaminating materials are sealed and/or covered, and lids/covers are opened as necessary and closed as necessary and at the end of each day.
- Drip pans and absorbents are used under or around leaking or leak-prone equipment.
- Leaks are promptly investigated and remedied to prevent contamination of stormwater.
- Use of granular absorbents is restricted to spills and emergency situations to avoid additional sediment loading.
- Equipment washing or cleaning is restricted to surface drainage area DA4, where wash water would receive treatment prior to discharge to the combined gravity main in NW 25th Place in the event of a failure of the wash water collection procedure.
- Cutting fluid recovery activities and fluid storage (Titanium Tent Collection Tank) associated with drying of titanium bales is restricted to surface drainage areas DA4 and DA5.

Oil and Grease:

- Rolling stock (lift trucks, loaders, material handlers) are inspected before use and regularly maintained to minimize fluid leaks.
- Any oil leaks from customer or service vehicles coming on-site are noted and cleaned up promptly.

Waste Chemicals and Material Disposal

- All waste materials are consolidated in specific locations and are not distributed throughout the facility.

Erosion and Sediment Control

- The entire site is covered with buildings, pavement of cement or asphalt and there is no sediment erosion potential.

Debris Control

- CleanWay catch basin inserts with mesh baskets are installed in all catch basins.

Dust Generation and Vehicle Tracking

- Dust is managed by a combination of hand-sweeping and a power sweeper vehicle (Tennant Sentinel). Vehicle tracking is minimized by compressed air blowdown of tires.

Housekeeping

- Employees are responsible for maintaining their work areas in an orderly manner, and for promptly cleaning up any debris or other materials that might contaminate stormwater.
- Leadmen and supervisors regularly inspect work areas for contamination hazards.
- Material storage bunkers are swept when empty.
- Employees sweep all travel lanes a minimum of once per week when weather allows.

Spill Prevention and Response

- Spill kits are available throughout indoor and outdoor areas where leaks or spills may occur.
- All tanks used to store fuel or waste fluids have secondary containment in the form of dual-wall tank construction or appropriately-sized external basins.
- Employees are trained in proper handling, clean-up, notification, and documentation procedures.
- Scrap equipment with intact tanks or reservoirs is not purchased.

Preventative Maintenance

- All catch basins are inspected a minimum of once a month and cleaned as needed based upon the observation of debris loading so as to avoid ponding and bypass.
- Source control practices, structural controls, and treatment controls are inspected and/or reviewed monthly and/or per manufacturer instructions.
- All treatment controls are maintained as per manufacturer instructions.
- Lift trucks are maintained under an ongoing service contract with a certified local Hyster dealer.
- Other rolling stock and stationary equipment is maintained by Calbag maintenance staff on a scheduled basis.
- All maintenance and inspection activities are recorded and subjected to annual audits.
- Employees have the authority and responsibility to decommission any piece of equipment requiring repairs that could create an environmental hazard.
- Recovered cutting fluid is removed bi-monthly, and all other wastes are removed as needed.

Employee Education

- Employees receive orientation and training to make them aware of the components and goals of Calbag's BMPs as part of annual permit sampling results summary presentation.

- Permit sampling results are shared with all employees as part of regular stand-up meetings on a quarterly basis.
- New employees who work in areas where stormwater is exposed to industrial activities or who conduct duties related to the implementation of BMPs are trained within 30 calendar days of hiring.
- All employees complete annual refresher training on Calbag EMS procedures (SOPs and WIs) applicable to their duties and responsibilities.

Non-Stormwater Discharges

- Catch basin aprons are pressure washed as needed as part of catch basin maintenance, using a vactor truck to remove all wash-water for offsite disposal.

6 DATA COLLECTION AND INTERPRETATION

6.1 Catch Basin Sampling

The purpose of the stormwater catch basin assessment in April 2009 was to determine whether contaminants in sediments are entering the stormwater system and to help determine the analytical suite for stormwater contaminants of concern. Catch basin sediment sampling was performed. Based on the results, remedial action was undertaken and further sampling would occur on an as-needed basis, such as following an accidental spill. The six catch basins were cleaned by vacu-truck in July 2009 and are monitored and cleaned per current BMPs. The catch basin sampling investigation is discussed above in Section 3.5

Data collected were tabulated and compared to DEQ's JSCS SLVs (DEQ, Joint Source Control Strategy. The following Chemicals of Interest (COI) were analyzed:

Metals EPA 6020/7471A

PCB Aroclors (individual and total) EPA 8082

Organochlorine pesticides EPA 8081A

Semivolatile organics EPA 8270C

PAHs and Phthalates EPA 8270C-SIM

Total Organic Carbon Plumb 1981

It was concluded there was no apparent pattern to the sample analyses that would likely identify an area of the facility that contributed more metals to specific catch basins, or group of catch basins. PCBs (Aroclor 1242) were detected in all samples except CB-4, with the highest detections in CB-5. There was no apparent pattern based on the analyses that would identify a likely source of PCBs.

With two exceptions, all semivolatile organic compounds ("SVOCs") were non-detectable and either exceeded screening criteria, or there are no screening criteria. Bis(2- ethylhexyl)phthalate ("DEHP") was detected above screening and bioaccumulation criteria in all samples, and pyrene was detected in CB-5. DEHP is generally associated with plastics and hydraulic fluids, but can be found in many other products. It has a low solubility in water. The detection of DEHP may be related to plastic coatings on various recycled metal products like wire, but the exact source was not known. Most polynuclear aromatic compounds ("PAHs"), typical components of asphalts, fuels, oils, and greases, were detected in catch basin samples above SLVs. The detection of PAHs is possibly due to the asphalt layering within the site and general vehicular traffic.

Organochlorine pesticides were not detected in any samples, or the detection limit exceeded the screening criteria in several samples. Such chemicals are not used at the facility and therefore the non-detection of pesticides was expected.

6.2 Stormwater Sampling

The surface drainage areas are shown in Figure 3. Schematic drawings of two existing stormwater treatment systems on the property are shown in Figure 4.

Discharge from the surface drainage area DA4 treatment system is to the combined gravity main within NW 25th Place pursuant to the Discharge Authorization Contaminated Stormwater Permit issued to Calbag by BES on March 7, 2013. Outlet treatment samples were collected and analyzed for constituents pursuant to the Permit on November 17, 2012 and January 27, 2013 which resulted in no constituents exceeding the discharge values of the Permit.

Discharge from the DA3 surface area to the treatment system is pursuant to NPDES 1200Z Permit (DEQ File No. 107179) and sampling is performed at the outlet on the treatment system prior to discharge to the Willamette River through Outfall 16. The following is a summary of stormwater sampling at the DA3 surface area treatment system. The results are shown in Table 12 and laboratory reports are included in Appendix O.

Oregon DEQ developed a series of stormwater concentration charts to aid in evaluation of the stormwater pathway for industrial sites that may discharge stormwater to the Portland Harbor Superfund site. The charts are based on stormwater data collected at several upland industrial sites within the Portland Harbor area. Detected concentrations of common industrial contaminants have been compiled and are presented in rank order graphs. Use of the stormwater rank order charts is a screening tool to assess whether concentrations of contaminants detected in stormwater at an industrial site are elevated when compared to other industrial sites. Comparison to “typical” industrial stormwater, as presented in the DEQ stormwater rank order charts, is one way to assess whether uncontrolled discharges are occurring from an industrial site.

Twelve common industrial contaminants are plotted in the DEQ stormwater charts and include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc), total PAHs, total PCBs and total suspended solids. Between 155 to more than 400 data points from industrial sites in the Portland Harbor area were used to construct the stormwater charts. Typically the ranked data plot with two distinct line slopes with an inflection point separating the flatter lower concentration portion of the line from the steeper higher concentration portion of the line. This inflection point or “knee” is a threshold above which concentrations of contaminants at one industrial site may be considered elevated with respect to other industrial sites. The knee is an area on the line slope indicating potentially elevated concentrations.

To use the DEQ stormwater charts, site data was plotted along with data furnished by DEQ. Site contaminant concentration data may plot at or below the knee of the line slope which may suggest they are within a typical industrial range. Data may also plot at or above the knee which may suggest they are potentially elevated concentrations and further evaluation or source control measures may be warranted. When interpreting site data plotted on the stormwater charts other factors should be considered that may have impacted stormwater samples collected including normal day-to-day activities, events occurring between sampling events, and the intensity and weather pattern associated with the sampling event.

Stormwater samples were collected at the Calbag site during eight storm events between December 2012 and March 2014 (Figures 8A through 8H). The Calbag data for the common industrial contaminants were plotted on the DEQ SCE stormwater charts (for stormwater) and are presented in Figures 7A through 7M pursuant to DEQ's "Guidance for Evaluating the Stormwater Pathway at Upland Sites", Appendix C. Consistent with the DEQ SCE stormwater charts, only sample values that were detected above the method reporting limit are plotted on the charts of Figures 7A through 7M.

Four contaminants, including arsenic, Bis(2-ehtylhexyl)phthalate, silver and total PAHs, were not detected and do not plot on the stormwater charts. Five contaminants, including chromium, mercury, total PCBs, TSS and zinc, were analyzed for or detected in Calbag stormwater but plot below the knee in the flatter portion of the line slope. Three contaminants, including cadmium, copper and lead, plot below at and slightly above the knee. One contaminant, nickel, plots at and above the knee.

In addition, Figures 9 and 10 show graphs of 1200-Z NPDES sample data for metals (Cu, Pb, Zn, Cd, Cr, Ni, Ag, and Hg) with concentrations plotted over time. Trends were calculated for the data and are shown as dashed lines on the figures. The purpose of these trend graphs is to show further weight of evidence of decreasing concentrations over time to support effectiveness of site source control BMPs for the common industrial contaminants that form the basis of the SCE stormwater charts of Figures 7A through 7M.

Site data for the common industrial contaminants plotted on the DEQ SCE stormwater charts, NPDES trend graphs, and other site-specific factors, are discussed below.

Arsenic: two samples are reported as not detected and therefore no arsenic concentration data points are plotted on the SCE stormwater chart of Figure 7A. Analysis of the two samples resulted in concentrations detected below the reporting limit, but above the method detection limit. Both the reporting and method detection limits for the two samples are above the PH SLV. A trend graph was not prepared for arsenic because only two samples were collected that resulted in non-detects.

Arsenic is considered to be adequately controlled by current site stormwater treatment and BMPs. No further source control measures are recommended for arsenic.

Bis(2-Ethylhexyl)phthalate: three samples are reported as not detected and therefore are not plotted on the SCE stormwater chart of Figure 7B. Analysis of the two samples resulted in non-detect below the method detection limit. The method detection and reporting limits for this contaminant are higher than the PH SLV. A trend graph was not prepared for bis(2-ethylhexyl)phthalate because only two samples were collected and were not detected.

Use of plasticizers is not a typical day-to-day activity at the site and this contaminant would not be expected to be present in stormwater. No further source control measures are recommended for Bis(2-Ethyhexyl)phthalate.

Cadmium: six data points for cadmium detected at concentrations above the reporting limit plot at, slightly above, and slightly below, the knee of the line slope on the SCE stormwater chart of Figure 7C. Data points that plot above the knee are two of the earliest stormwater samples, while more recent stormwater samples plot at and below the knee indicating a decrease in concentration in stormwater as a result of improved treatment and BMPs. The graph of Figure 10 shows concentrations of cadmium trending downward over time also indicating increasing effectiveness of site BMPs. More recent sample concentrations are above the PH SLV but still within the typical range of area industrial concentrations.

Continued monitoring of stormwater treatment system and BMP effectiveness for cadmium are recommended.

Chromium: six data points for chromium detected at concentrations above reporting limits plot below the knee of the line slope on the SCE stormwater chart of Figure 7D, and are also well below the PH SLV. Two samples resulted in non-detects for chromium that are not plotted on Figure 7D; one sample analysis resulted in detection above the method reporting limit but below an elevated method detection limit of 2.0 ug/l, and a second sample analysis resulted in non-detect below the method reporting limit. As shown on the trend plot of Figure 9, concentrations of chromium detected over time show a decreasing trend.

While chromium is associated with metals handled at the site this contaminant is considered to be adequately controlled by current site stormwater treatment and BMPs. No further source control measures are recommended for chromium.

Copper: eight data points for copper concentrations detected above reporting limits plot below, at, and above the knee of the line slope on the SCE stormwater chart of Figure 7E. The four most recent data points (for 11/1/2013, 12/20/2013, 2/17/2014 and 3/8/2014) plot below the knee and progressively lower on the flatter portion of the line slope below the knee. This suggests a continued decrease in concentration of copper in site stormwater although these concentrations are one to two orders of magnitude higher than the PH SLV. The trend graph of Figure 9 also indicate a decrease in concentration of copper over time and further supports effectiveness of site BMPs. Continued monitoring of the stormwater treatment system and BMP effectiveness are recommended.

Lead: eight data points for lead concentrations detected above the reporting limit plot at and below the knee of the line slope on the SCE stormwater chart of Figure 7F. The four most recent data points (5/21/2013, 11/1/2013, 2/17/2014, and 3/8/2014) plots successively lower below the knee on Figure 7F. The trend calculated for lead shown on the graph of Figure 9 indicates decreasing concentrations over time. Both SCE stormwater chart and trend graph show decreasing concentrations of lead and effectiveness of site BMPs to control concentrations of lead in stormwater.

Lead is associated with metals handled at the site and the detected concentrations are less than an order of magnitude higher than the PH SLV. Continued monitoring of stormwater treatment system and BMP effectiveness are recommended.

Mercury: two data points for mercury concentrations detected above reporting limits plot below the knee on the flatter portion of the line slope on the SCE stormwater chart of Figure 7G. Three sample analyses resulted in detection of concentrations above the method detection limit but below the reporting limit. Two sample analyses resulted in non-detect below the method detection limit. All concentrations of mercury in stormwater detected above the method detection limit are below the PH SLV. The trend graph of Figure 10 indicates decreasing concentrations of mercury over time.

Mercury is not a significant metal that is handled day-to-day on the site. No further source control measures are recommended for mercury.

Nickel: eight data points for nickel concentrations detected above the reporting limit plot at, and above, the knee of the line slope on the SCE stormwater chart of Figure 7H. Nickel concentrations have varied during the stormwater monitoring period with no readily discernable trend as shown on the trend graph of Figure 10. Half of the data points, including more recent samples, plot above the knee and are up to two times higher than the PH SLV.

Nickel is associated with metals which were handled at the site, or potentially slag and dust resulting from plasma cutting, and may warrant further evaluation of current treatment and/or BMPs to effectively control concentrations of nickel in stormwater.

Silver: two samples are reported as not detected above the reporting limit and are not plotted on the stormwater chart. The reporting limit is an order of magnitude higher than the PH SLV, and the method detection limit is slightly above the PH SLV. A trend graph was not prepared for silver because only two samples were collected and resulted in non-detects.

Silver is not a significant metal that is handled in day-to-day operations at the site and would not be expected to be present in stormwater. No further source control measures are recommended for silver.

Total PAHS: seven samples are reported as not detected for individual PAHs; because of non-detects PAH sums were not calculated and are therefore not plotted on the SCE stormwater chart of Figure 7J. Most reporting limits for individual PAHs are below their respective PH SLVs (see Table 12).

PAHs are associated with the materials handled and equipment operated at the site in a day-to-day basis. No further source control measures are recommended for total PAHs.

Total PCBs: two data points for total PCB concentrations detected above reporting limits plot below the knee of the line slope on the SCE stormwater chart of Figure 7K. Total PCBs are calculated as the sum of Aroclors, excluding non-detects (below reporting limits), pursuant to the DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites, Appendix A. Two sample analyses resulted in individual Aroclors detected at concentrations below the reporting limit but above the method detection limit. Three sample analyses resulted in non-detects of individual Aroclors below the method detection limit. Most reporting limits for individual Aroclors are at or below their individual PH SLVs (see Table 12).

Implemented source control BMPs include mechanical cleaning, replacement of pavement in exterior areas, and replacement of concrete flooring in the warehouse.

No further source control measures are recommended for total PCBs. PCBs are not accepted for recycling per Calbag policy.

Total Suspended Solids: four data points for measured suspended solids plot below the knee on the line slope on the SCE stormwater chart of Figure 7L. This suggests that the site stormwater is consistent with typical industrial stormwater and that TSS is adequately controlled by current stormwater treatment and BMPs. No further source control measures are recommended for TSS.

Zinc: eight data points for zinc concentrations detected above reporting limits plot on the flat portion of the line below the knee on the SCE stormwater chart of Figure 7M. The calculated trend for detected zinc concentrations is shown on the graph of Figure 9 and indicates decreasing concentrations of zinc over time. All detected concentrations exceed the PH SLV but are well below the knee of the line slope on the chart of Figure 7M and thus well below the elevated range of area industrial concentrations.

Zinc is associated with materials handled at the site on a day-to-day basis. Because detected concentrations of zinc are on the flatter portion of the line slope, well below the knee, indicates that zinc is adequately controlled by current stormwater treatment and BMPs. No further source control measures are recommended for zinc.

Table 12 – Portland Harbor Area Industrial Sites Stormwater Data – 2495 NW Nicolai Street

Contaminant of Interest	PH SLV	Units (_g/L)	11/23 /2012	12/11/2012	4/29/2013	5/21/2013	11/1/2013	12/20/2013	2/17/2014	3/8 /2014
TSS	---	m	ND (//5.00)	19.0	14.0	19.0	6.00	ND (//5.00)	ND (//5.00)	ND (//5.00)
TOC	---	m	NS	NS	NS	NS	16.5	11.0	NS	NS
Total Cu	2.7	u	32.4	130	114	203	54.5	70.2	36.7	16.9
Total Pb	0.54	u	15.3	62.1	18.3	59.5	20.7	33.9	19.4	4.97
Total Zn	36	u	44.3	129	41.9	123	36.8	42.3	70.4	52.0
Total Al	50	u	172	1360	213	799	223	270	192	ND (//250)
Total Cd	0.094	u	ND (//1.00)	1.30	*0.589* (0.500//1.00)	1.54	0.511	0.522	0.800	0.878
Total Cr	100	u	ND (//2.00)	8.02	*1.70* (0.400//2.00)	6.22	2.47	2.04	1.60	1.00
Total Ni	16	u	7.51	25.7	12.2	22.8	9.02	8.52	16.9	26.2
Total Sb	6	u	NS	NS	NS	NS	1.67	1.93	NS	NS
Total As	0.045	u	NS	NS	NS	NS	*0.644* (0.500//1.00)	*0.611* (0.500//1.00)	NS	NS
Total Mn	50	u	NS	NS	NS	NS	6.79	10.1	NS	NS
Total Ag	0.12	u	NS	NS	NS	NS	ND (0.100//1.00)	ND (0.100//1.00)	NS	NS
Total Hg	0.77	u	ND (//0.0800)	0.169	*0.0492* (0.0400 //0.0800)	0.213	*0.0639* (0.0400 //0.0800)	*0.0619* (0.0400 //0.0800)	ND (0.0400 //0.0800)	NS
Aroclor 1016	0.96	u	ND (0.050 //0.10)	0.20	ND (0.00980 //0.0196)	ND (0.00990 //0.0198)	ND (0.00980 //0.0196)	ND (0.00971 //0.0194)	ND (0.0485 //0.0971)	NS
Aroclor 1221	0.034	u	ND (0.060 //0.10)	ND (0.060//0.10)	ND (0.00980 //0.0196)	ND (0.00990 //0.0198)	ND (0.00980 //0.0196)	ND (0.00971 //0.0194)	ND (0.0485 //0.0971)	NS
Aroclor 1232	0.034	u	ND (0.10 //0.10)	ND (0.10//0.10)	ND (0.00980 //0.0196)	ND (0.00990 //0.0198)	ND (0.00980 //0.0196)	ND (0.00971 //0.0194)	ND (0.0485 //0.0971)	NS
Aroclor 1242	0.034	u	ND (0.070 //0.10)	ND (0.070//0.10)	ND (0.00980//0.0196)	*0.0441* (0.00990//0.0198)	*0.0149* (0.00980//0.0196)	*0.0163* (0.00971//0.0194)	ND (0.0485 //0.0971)	NS

Contaminant of Interest	PH SLV	Units (_g/L)	11/23 /2012	12/11/2012	4/29/2013	5/21/2013	11/1/2013	12/20/2013	2/17/2014	3/8 /2014
Aroclor 1248	0.034	u	ND (0.060 //0.10)	ND (0.060//0.10)	ND (0.00980 //0.0196)	ND (0.00990 //0.0198)	ND (0.00980 //0.0196)	ND (0.00971 //0.0194)	ND (0.0485 //0.0971)	NS
Aroclor 1254	0.033	u	ND (0.040 //0.10)	ND (0.040//0.10)	*0.0206* (0.00980 //0.0196)	*0.0635* (0.00990 //0.0198)	0.0208	*0.0186* (0.00971 //0.0194)	ND (0.0485 //0.0971)	NS
Aroclor 1260	0.034	u	ND (0.040 //0.10)	*0.048* (0.040//0.10)	ND (0.00980 //0.0196)	*0.0277* (0.00990 //0.0198)	ND (0.00980 //0.0196)	*0.0104* (0.00971 //0.0194)	ND (0.0485 //0.0971)	NS
Aroclor Sum	6.4E-05	u	ND (0.10)	0.20	ND(0.0196)	ND(0.0198)	0.0208	ND(0.0194)	ND//(0.0971)	NS
Naphthalene	0.2	u	NS	NS	ND (0.0792 //0.158)	NS	ND (0.194//0.388)	ND (0.196//0.392)	NS	NS
2-Methylnaphthalene	0.2	u	NS	NS	ND (0.0792 //0.158)	NS	ND (0.194//0.388)	ND (0.196//0.392)	NS	NS
Acenaphthylene	0.2	u	NS	NS	ND (0.0396 //0.0792)	NS	ND (0.0971 //0.194)	ND (0.0980 //0.196)	NS	NS
Acenaphthene	0.2	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	ND (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Fluorene	0.2	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	ND (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Phenanthrene	0.2	u	NS	NS	ND (0.0396 //0.0792)	NS	ND (0.0971 //0.194)	ND (0.0980 //0.196)	NS	NS
Anthracene	0.2	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	ND (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Fluoranthene	0.2	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	*0.166* (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Pyrene	0.2	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	*0.138* (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Benzo(a)anthracene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	*0.104* (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Chrysene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	*0.130* (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Benzo(b)fluoranthene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0594 //0.119)	*0.276* (0.150//0.300)	ND (0.146//0.291)	ND (0.147//0.294)	ND (0.962//0.962)	NS
Benzo(k)fluoranthene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0594 //0.119)	NS	ND (0.146//0.291)	ND (0.147//0.294)	ND (0.962//0.962)	NS

Contaminant of Interest	PH SLV	Units (_g/L)	11/23 /2012	12/11/2012	4/29/2013	5/21/2013	11/1/2013	12/20/2013	2/17/2014	3/8 /2014
Benzo(a)pyrene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0594 //0.119)	*0.227* (0.150//0.300)	ND (0.146//0.291)	ND (0.147//0.294)	ND (0.962//0.962)	NS
Indeno(1,2,3-cd)pyrene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	*0.118* (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Dibenz(a,h)anthracene	0.018	u	ND (//0.490)	ND (0.735//1.47)	ND (0.0396 //0.0792)	ND (0.100//0.200)	ND (0.0971 //0.194)	ND (0.0980 //0.196)	ND (0.962//0.962)	NS
Benzo(g,h,i)perylene	0.2	u	NS	NS	ND (0.0396 //0.0792)	NS	ND (0.0971 //0.194)	ND (0.0980 //0.196)	NS	NS
PAH Sum (17 listed above)	---	u	NA	NA	NA	NA	NA	NA	NA	NS
Butylbenzylphthalate	3	u	ND (//0.980)	ND (1.47//2.94)	ND (5.94//11.9)	NS	ND (14.6//29.1)	ND (14.7//29.4)	NS	NS
Bis(2-ethylhexyl)phthalate	2.2	u	NS	NS	ND (4.36//8.71)	NS	ND (10.7//21.4)	ND (10.8//21.6)	NS	NS
Di-n-butylphthalate	3	u	ND (//0.980)	ND (1.47//2.94)	ND (5.94//11.9)	NS	ND (14.6//29.1)	ND (14.7//29.4)	NS	NS
Diethylphthalate	3	u	ND (//0.980)	ND (1.47//2.94)	ND (5.94//11.9)	NS	ND (14.6//29.1)	ND (14.7//29.4)	NS	NS
Dimethylphthalate	3	u	ND (//0.980)	ND (1.47//2.94)	ND (5.94//11.9)	NS	ND (14.6//29.1)	ND (14.7//29.4)	NS	NS
Di-n-octylphthalate	3	u	ND (//0.980)	ND (1.76//3.53)	ND (5.94//11.9)	NS	ND (14.6//29.1)	ND (14.7//29.4)	NS	NS

Table 12 Notes

ND (X//X)	non-detect at MDL; MDL and MRL listed in parenthesis; no MDL indicates ND at the MRL level
NA	not analyzed
NS	not sampled
[italic] (X//X)	estimated result (MDL< result < MRL or matrix interference); MDL and MRL listed in parenthesis; no MDL indicates ND at the MRL level
PCBs	Total PCBs are calculated as the sum of aroclors, excluding non-detects
PAHs	Total PAHs are calculated when all PAHs are detected
[shading]	result > PH SLV
[shading]	result < PH SLV; if non-detect, then MRL < PH SLV
[shading]	ND MDL < PH SLV < ND MRL

7 SOURCE CONTROL MEASURES

In addition to the BMPs described above in Section 5, the following stormwater source control measures have been implemented. Further stormwater management controls are discussed in Appendix L, Stormwater Management Report.

Stormwater Treatment Systems

- A discharge line from catch basin CB-5 to the combined gravity main in NW 25th Place was abandoned and plugged;
- A new discharge line from CB-5 to the oil/water separator was installed;
- Catch basin CB-5 was replaced with a larger capacity catch basin;
- A new surface drainage area DA4 treatment system was installed downstream of the oil/water separator to provide removal of PCBs in stormwater prior to discharge to the combined gravity main;
- The surface drainage area DA3 existing treatment system at the NPDES discharge point was upgraded.

Concrete Paving Replacement

- Approximately 3,900 square feet (sf) of concrete surface in the surface drainage DA4 area near the entrance from NW 25th Place was replaced with new concrete to remove concrete containing PCBs.
- A section of concrete flooring in the warehouse containing PCBs at the auto transmission storage bin was replaced.

Additional Analyses NPDES Point of Sampling

- Additional stormwater analyses are included as supplemental to the required 1200-Z permit sampling at the surface drainage area DA3 treatment system discharge. The purpose of the stormwater monitoring is to assure the effectiveness of the updated stormwater treatment system.

Updated BMPs

- A revised BMP Manual was prepared to provide methods and protocols to minimize future contamination of site stormwater and effectively maintain the stormwater collection, conveyance, and treatment systems. The BMP Manual is incorporated into the SWPCP required by the 1200-Z ISG permit. Inspection frequency has been increased of stormwater treatment BMPs, especially during periods of wet weather.

Asphalt Paving

- Approximately 11,000 sf of the asphalt and cobblestone surface in the access driveway alongside the warehouse was overpaved within surface drainage area DA4 to serve as a permanent cap to underlying asphalt containing PCBs.

Sweeping

- Cleaning of asphalt pavement and concrete surfaces to remove particles adhering to surfaces is accomplished by sweeping all travel lanes a minimum of once per week when weather allows.
- The 2495 NW Nicolai facility yard has been reorganized to increase sweeper access.
- Increased coordination of activities has been made with the sweeper operator to enable immediate cleanup and minimize tracking.

8 SOURCE CONTROL EVALUATION

8.1 Data Evaluation

As outlined above in Section 7, source control measures have been implemented to reduce the concentrations of COIs through treatment systems, upgrading of catch basins filters, and BMPs. Based on the results of stormwater sampling over the past two or three years the implemented BMPs have significantly reduced concentrations of contaminants present in catch basin sediment, on roofs and paved surfaces and in treated stormwater discharged to the Basin 16 stormwater pipeline.

The stormwater sampling data discussed in Section 6 for discharge from surface area DA3 pursuant to the NPDES Permit has shown the effectiveness of the treatment system and BMPs. Concentrations of contaminants that are monitored in stormwater have been significantly reduced over the past two to three years (see Figures 9 and 10). This reduction has been achieved through implementation of updated BMPs and updgrading the onsite stormwater treatment system. Arsenic, chromium, mercury, and zinc show concentrations that are below area-wide stormwater concentrations. Cadmium, copper, lead, and total PCBs show a continuing trend of reduction in concentrations compared to area-wide stormwater concentrations. Only nickel is at or above area-wide stormwater concentrations.

Evaluation of potential sources of nickel at the Site indicates no one location where nickel is present in processed scrap metals which makes development of additional BMPs or other source control measures difficult. One potential source of nickel is slag and dust resulting from plasma cutting. Since the concentrations of nickel in stormwater are variable over time a recommended approach is to evaluate the effectiveness of the stormwater treatment system in treating for nickel. This could include increasing the frequency of cleaning the sand filter, collecting duplicate stormwater samples to confirm the presence and concentration of nickel, and careful management of housekeeping BMPs.

8.2 Other Lines of Evidence

The primary evidence for effectiveness of source control measures that have been taken at the Site is monitoring stormwater quality through the stormwater sampling program. As part of the remedial action at the Site, catch basins have been replaced or upgraded, surfaces repaved and sealed, stormwater treatment system updated, and piping between catch basins, treatment system and outfall connections upgraded or replaced as needed. No other lines of evidence are evaluated at this time.

9 FINDINGS AND CONCLUSIONS

The following statements and explanations are made pursuant to recommendations made by DEQ in the "Guidance For Evaluating Stormwater Pathway at Upland Sites", Appendix C, page 8.

1. **Existing and potential facility-related contaminant sources have been identified and characterized.**
    - Calbag's operations are predominantly indoors, with all outdoor areas paved. The primary outdoor activity at the facility is the delivery of scrap metals by truck or customer private vehicles, and unloading and loading of the scrap metal. Most of the sorting and processing of the scrap metal takes place indoors (inside the warehouse building) or under the canopy. Materials waiting to be sorted or packaged are stored loose in piles, drums, boxes, or hoppers. Outdoor storage is generally limited to full and empty hoppers, uncovered storage piles separated by concrete block walls, empty steel drop-boxes, some baled metals, and trucks. Most loading and unloading of materials takes place on covered docks around the buildings. Typical pollutant sources to the site's stormwater include the materials stored outside in hoppers or boxes, including aluminum solids, copper and lead from radiators, insulated aluminum wire, insulated copper wire, stainless steel solids and borings, and iron and steel solids and borings. The only loose materials exposed to stormwater are aluminum and stainless steel solids. Insulated wire is stored in bunkers that are covered and not exposed to stormwater.
    - The surface drainage area DA3 existing treatment system at the NPDES discharge point was upgraded and stormwater sampling is ongoing pursuant to the NPDES Permit. PCB concentrations are at or below the stormwater data from other industrial sites.
    - Investigation of groundwater and soil beneath the facility has concluded that chemicals of interest are not present in elevated concentrations. Detected chemicals are in limited areas beneath building floor slabs or asphalt caps. Groundwater exceeding 40 feet beneath the facility does not have the potential to discharge to the surface at the facility.
2. **Contaminant sources are being controlled to the extent feasible.**
    - Best management practices (BMPs) to minimize pollutant impacts to the site's stormwater are routinely implemented at the facility and include sweeping and catch basin cleanouts. The back lot is swept at least once a week with a power sweeper if weather conditions permit. Loading docks are swept manually every day. Catch basins are equipped with filter inserts and are regularly inspected and cleaned quarterly.
    - Major upgrades have been made to the DA3 stormwater treatment system and a new treatment system and enhanced oil water separator were installed at the discharge point of the DA4 surface drainage area.

- Discharges from all surface drainages areas except DA3 are to City treatment systems through combined gravity mains.
- Nickel is associated with metals handled at the facility and may warrant further evaluation of current treatment and/or BMPs to effectively control concentrations of nickel in stormwater discharges from the DA3 surface drainage area at the NPDES discharge point.

3. **If pre and post-SCM data was collected, post-SCM data supports the conclusion that the SCM is effective.**

- A soil and groundwater investigation concluded that chemicals are not present at elevated concentrations in soil or groundwater beneath the facility. Only cadmium, lead and mercury, and some PAHs, are present in soil at concentrations that exceed their SLVs or RBCs in a limited area mostly beneath the existing building floor slab or beneath the asphalt cap of NW 25th Avenue.
- The stormwater source control evaluation focused on potential sources of PCBs with the potential to migrate to the Willamette River via stormwater. Initially PCBs were detected in catch basin sediment and the evaluation expanded to identify sources of PCBs to the catch basins.
- Based on the results of the catch basin sediment samples analyses, all of the catch basins were subsequently cleaned using vacuum and power washing systems. In addition, a video survey was made of the stormwater line leading from CB-5[1] to the City combined gravity main in NW 25th Place to confirm the connection and integrity of the line leading from CB-5.
- Sampling of onsite building roofs and sediment between cobblestones in NW 25th Place was conducted to determine potential sources of contamination detected in the onsite stormwater catch basins.
- Samples analyzed from asphalt and soil beneath the asphalt in NW 25th Place and several locations resulted in only Aroclor 1254 detected in soil samples from beneath the asphalt. Subsequent resurfacing by asphalt resulted in a remedial cap within NW 25th Place. Replacing the concrete roadway within the facility entrance from NW 25th Place removed any residual chemicals of interest.

4. **Adequate measures are in place to ensure source control and good stormwater management measures occur in the future.**

Source control stormwater treatment system modifications to include:

- Ongoing: Cleaning of asphalt pavement and concrete surfaces inside the warehouse building to remove PCB particles adhering to surfaces.
- Complete: Abandon and plug the existing discharge line from catch basin CB-5 to the CSO.
- Complete: Install a new discharge line from CB-5 to the oil/water separator.

[1] Catch basin designations were revised. See Figure 2.

- Complete: Replace CB-5 with a larger capacity catch basin.
- Complete: Install a new treatment system (StormwateRx system) downstream of the oil/water separator to provide removal of PCBs in stormwater prior to discharge to the City's CSO system.
- Complete: Covered the metal stockpiles located in the outdoor bulk storage area along NW 25th Avenue (alley) and the storage bins across from the titanium tent area.
- Complete: Replace approximately 2,900 square feet (sf) of concrete surface in the tent area with new concrete.
- Complete: Stormwater monitoring to include preparation of a stormwater monitoring plan and 3 years of stormwater sampling that would be supplemental to the required 1200-Z ISG permit sampling. The purpose of the stormwater monitoring is to evaluate the effectiveness of the implemented remedy and provide data for the DEQ Source Control Decision for the site.
- Complete: Prepare a BMP Manual to provide methods and protocols to minimize future contamination of site stormwater and effectively maintain the stormwater collection, conveyance, and treatment systems. The BMP Manual was incorporated into the SWPCP required by the 1200-Z ISG permit.
- Complete: Repave approximately 11,000 sf of the asphalt surface in the NW 25th Avenue area.
- Complete: Replace CB-5 with a larger, double-chambered catch basin to collect sediments.
- Complete: Connect CB-5 with a new 8-inch diameter polyvinyl chloride (PVC) pipe to a new manhole installed near CB-4.
- Complete: Connect CB-4 to the new manhole.
- Complete: Connect the new manhole to the new Clara® unit with a new 8-inch PVC pipe.
- Complete: Remove CB-3 and replaced it with an inlet to the new Clara® unit.

5. **Contaminants in stormwater that continue to exceed SLVs in spite of SCMs and stormwater management measures are not likely to result in sediment contamination in the receiving waterbody or contribute to unacceptable risk.**
    - The stormwater treatment systems are effectively preventing the discharging of contaminants from surface drainage areas DA3 and DA4. Nickel is associated with metals handled at the facility and has been detected at elevated concentrations, when compared to other industrial sites, within the discharge stormwater discharge from the DA3 surface drainage area at the NPDES discharge point. The small volumes of nickel discharging are considered to be within the acceptable risk compared to all the discharges to Outfall 16.

10 REFERENCES

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11 LIMITATIONS

This report has been prepared for use by Oregon DEQ and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only DEQ and the landowner(s) or landowner's agents should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

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Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied.

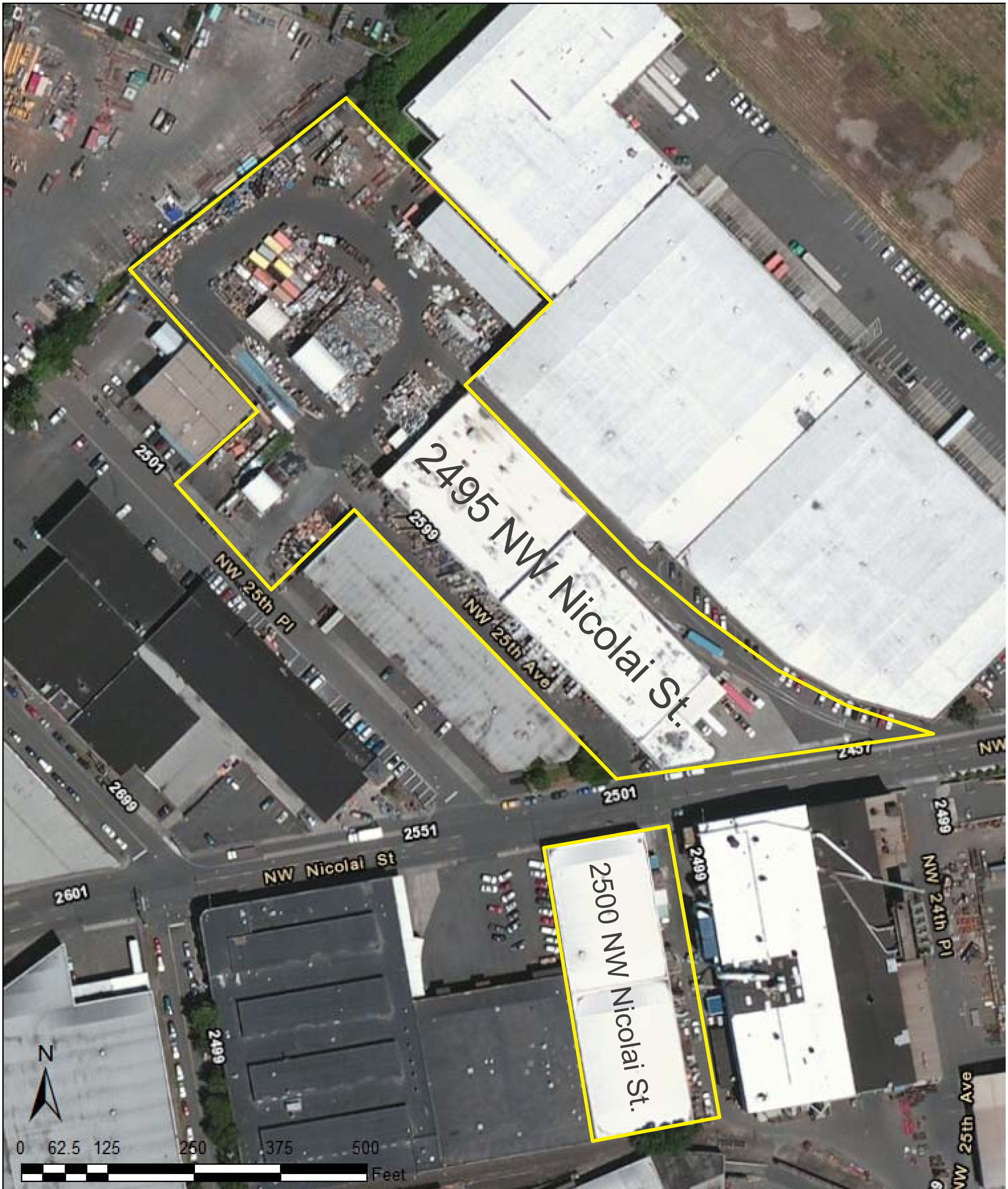
It is possible that available information failed to reveal the presence of hydrogeologic conditions, or hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not been discovered at the time of this report or in the future.

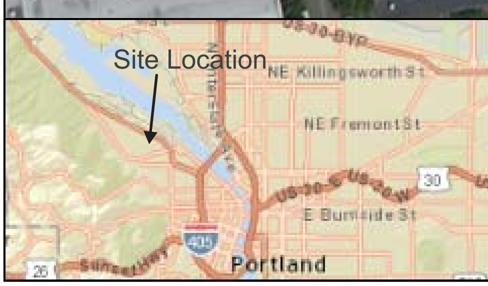
This report should not be construed as presenting a value to either the Site or the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

Richard C. Kent, R.G.

GeoPro LLC

FIGURES





Site Location Map

Figure 1

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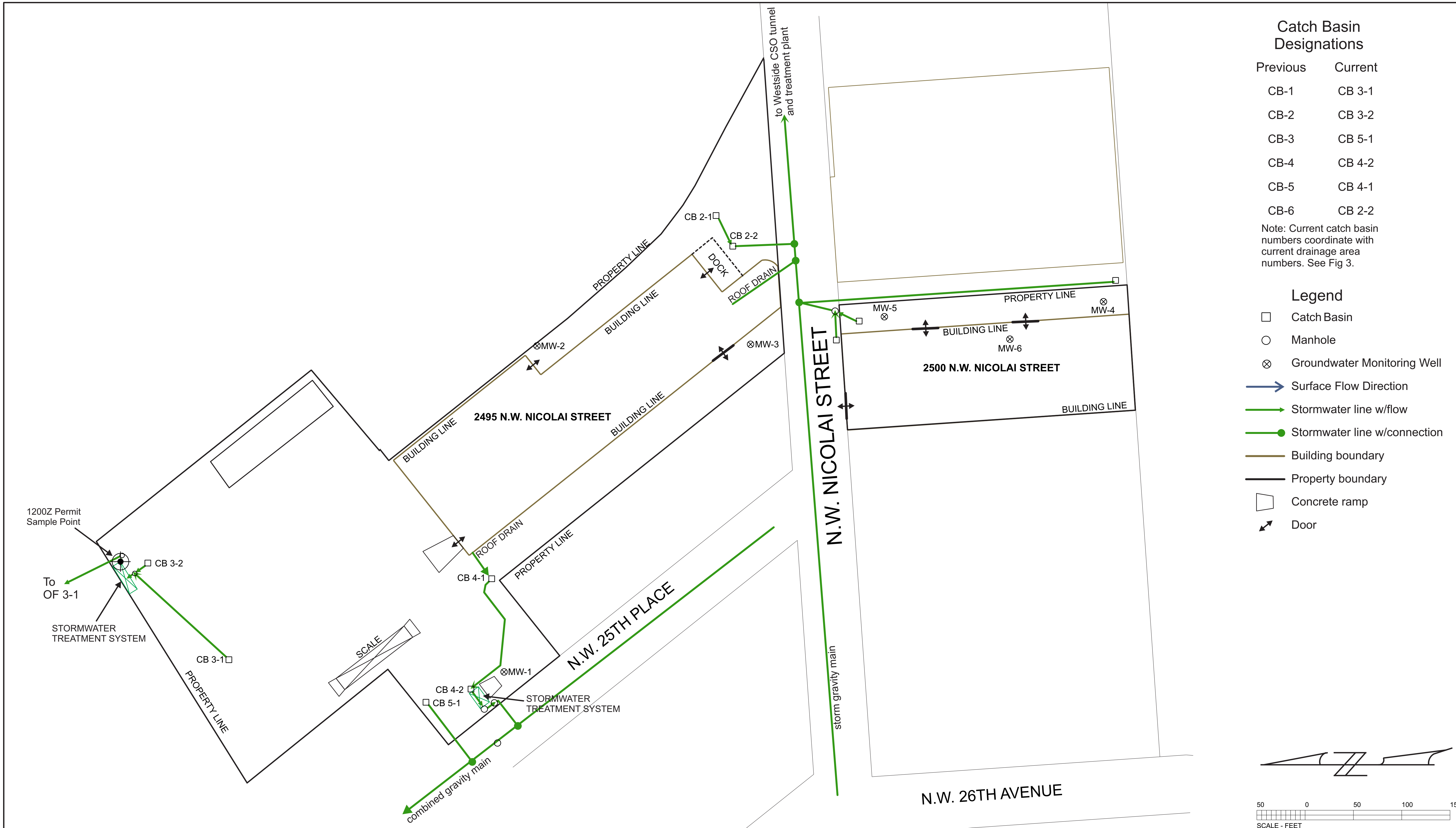
Calbag Metals Company Facilities
2495 and 2500 NW Nicolai St.
Portland Oregon

Stormwater Source Control Evaluation Report



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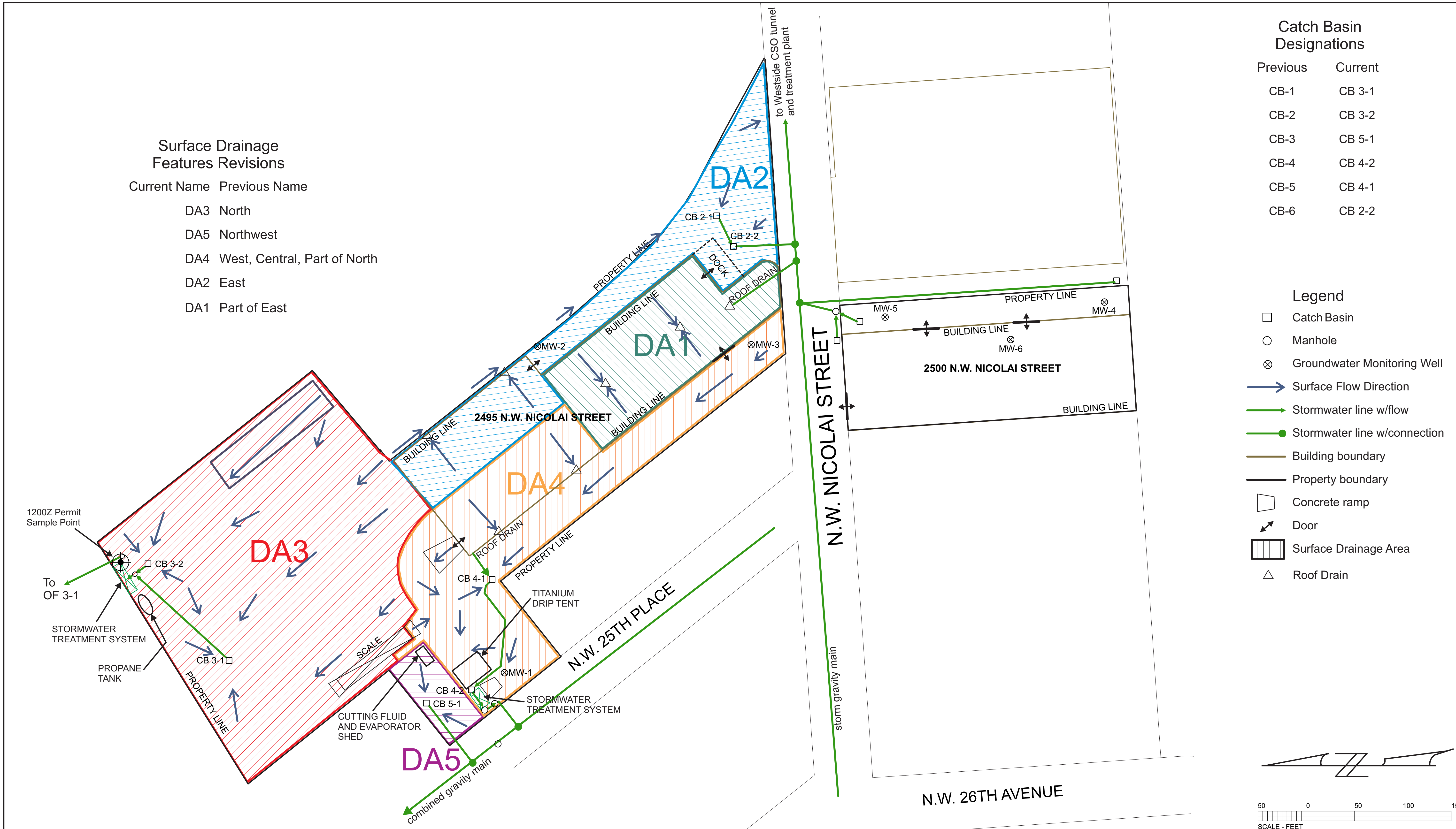
STORMWATER FACILITIES

Figure 2



Surface Drainage Features Revisions

Current Name	Previous Name
DA3	North
DA5	Northwest
DA4	West, Central, Part of North
DA2	East
DA1	Part of East

Catch Basin Designations

Previous	Current
CB-1	CB 3-1
CB-2	CB 3-2
CB-3	CB 5-1
CB-4	CB 4-2
CB-5	CB 4-1
CB-6	CB 2-2

Legend

- Catch Basin
- Manhole
- Groundwater Monitoring Well
- Surface Flow Direction
- Stormwater line w/flow
- Stormwater line w/connection
- Building boundary
- Property boundary
- Concrete ramp
- Door
- Surface Drainage Area
- Roof Drain

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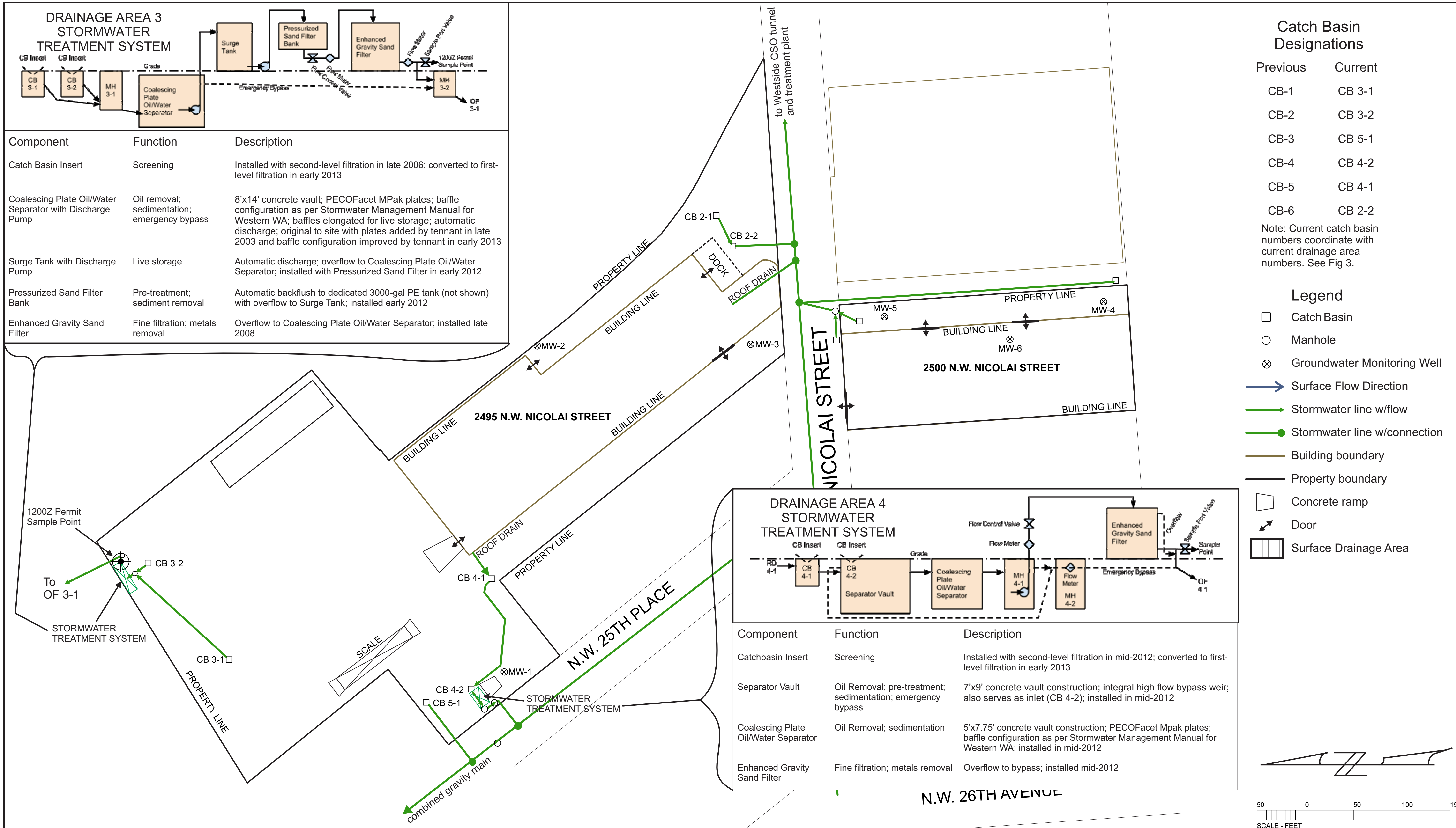
SURFACE DRAINAGE AREAS AND FACILITY FEATURES

Figure 3



Component	Function	Description
Catch Basin Insert	Screening	Installed with second-level filtration in late 2006; converted to first-level filtration in early 2013
Coalescing Plate Oil/Water Separator with Discharge Pump	Oil removal; sedimentation; emergency bypass	8'x14' concrete vault; PECOFacet MPak plates; baffle configuration as per Stormwater Management Manual for Western WA; baffles elongated for live storage; automatic discharge; original to site with plates added by tennant in late 2003 and baffle configuration improved by tennant in early 2013
Surge Tank with Discharge Pump	Live storage	Automatic discharge; overflow to Coalescing Plate Oil/Water Separator; installed with Pressurized Sand Filter in early 2012
Pressurized Sand Filter Bank	Pre-treatment; sediment removal	Automatic backflush to dedicated 3000-gal PE tank (not shown) with overflow to Surge Tank; installed early 2012
Enhanced Gravity Sand Filter	Fine filtration; metals removal	Overflow to Coalescing Plate Oil/Water Separator; installed late 2008

Component	Function	Description
Catchbasin Insert	Screening	Installed with second-level filtration in mid-2012; converted to first-level filtration in early 2013
Separator Vault	Oil Removal; pre-treatment; sedimentation; emergency bypass	7'x9' concrete vault construction; integral high flow bypass weir; also serves as inlet (CB 4-2); installed in mid-2012
Coalescing Plate Oil/Water Separator	Oil Removal; sedimentation	5'x7.75' concrete vault construction; PECOFacet Mpak plates; baffle configuration as per Stormwater Management Manual for Western WA; installed in mid-2012
Enhanced Gravity Sand Filter	Fine filtration; metals removal	Overflow to bypass; installed mid-2012

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Stormwater
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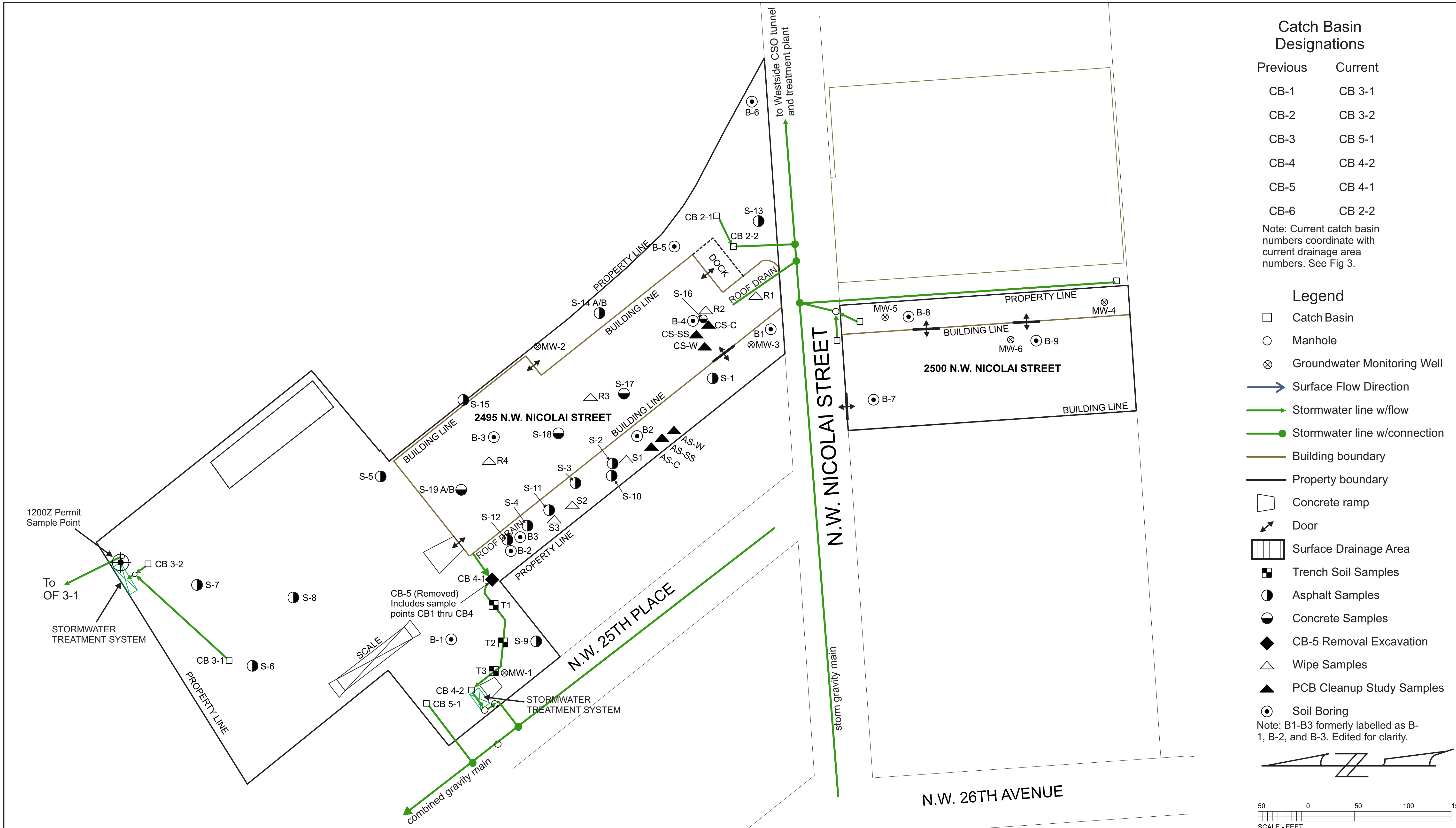
STORMWATER TREATMENT SYSTEMS COMPONENTS

Figure
4



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Stormwater Source Control Evaluation Report

Calbag Metals Company Facilities
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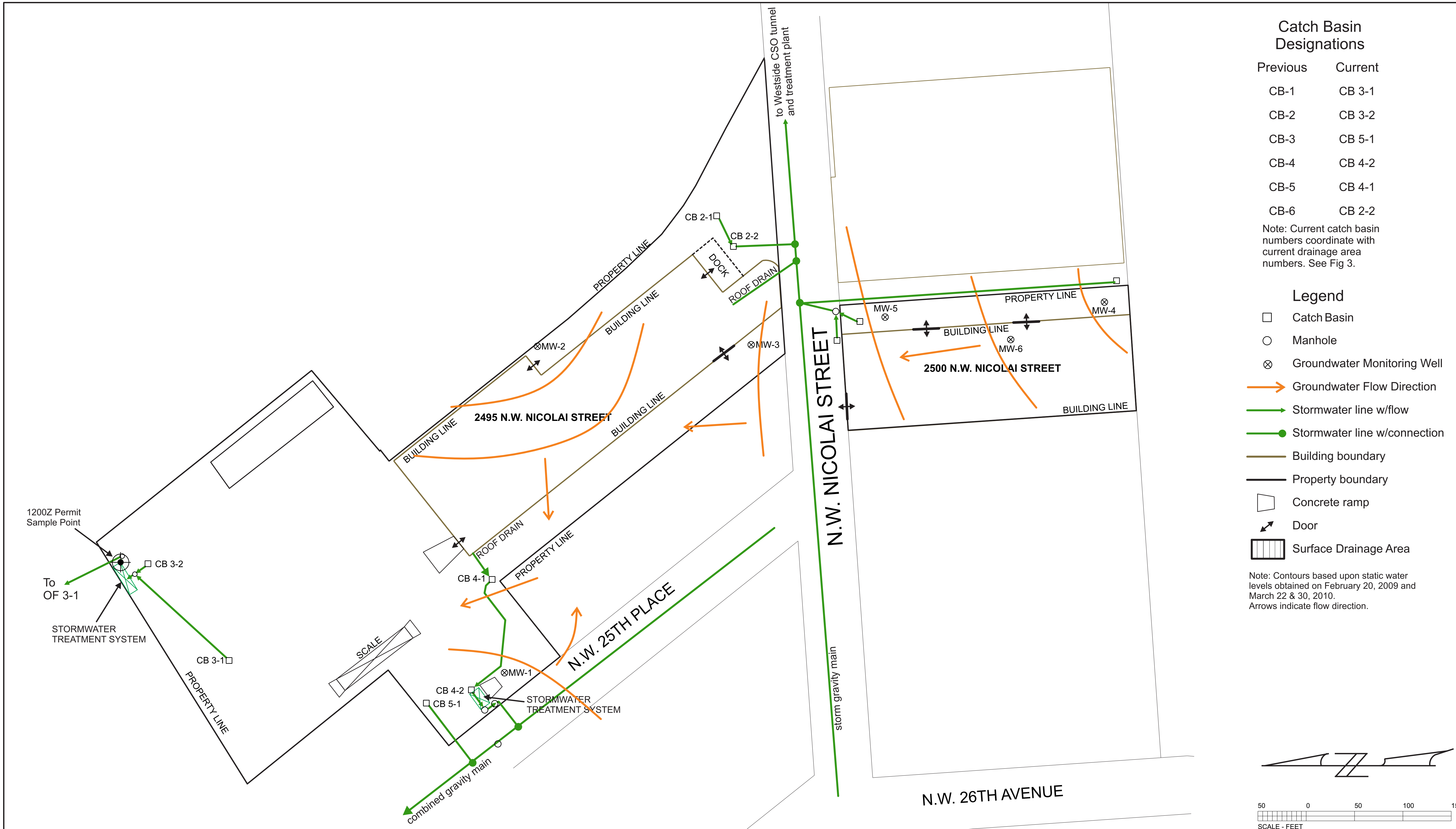
SAMPLE LOCATIONS MAP

Figure 5



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Calbag Metals Company Facilities
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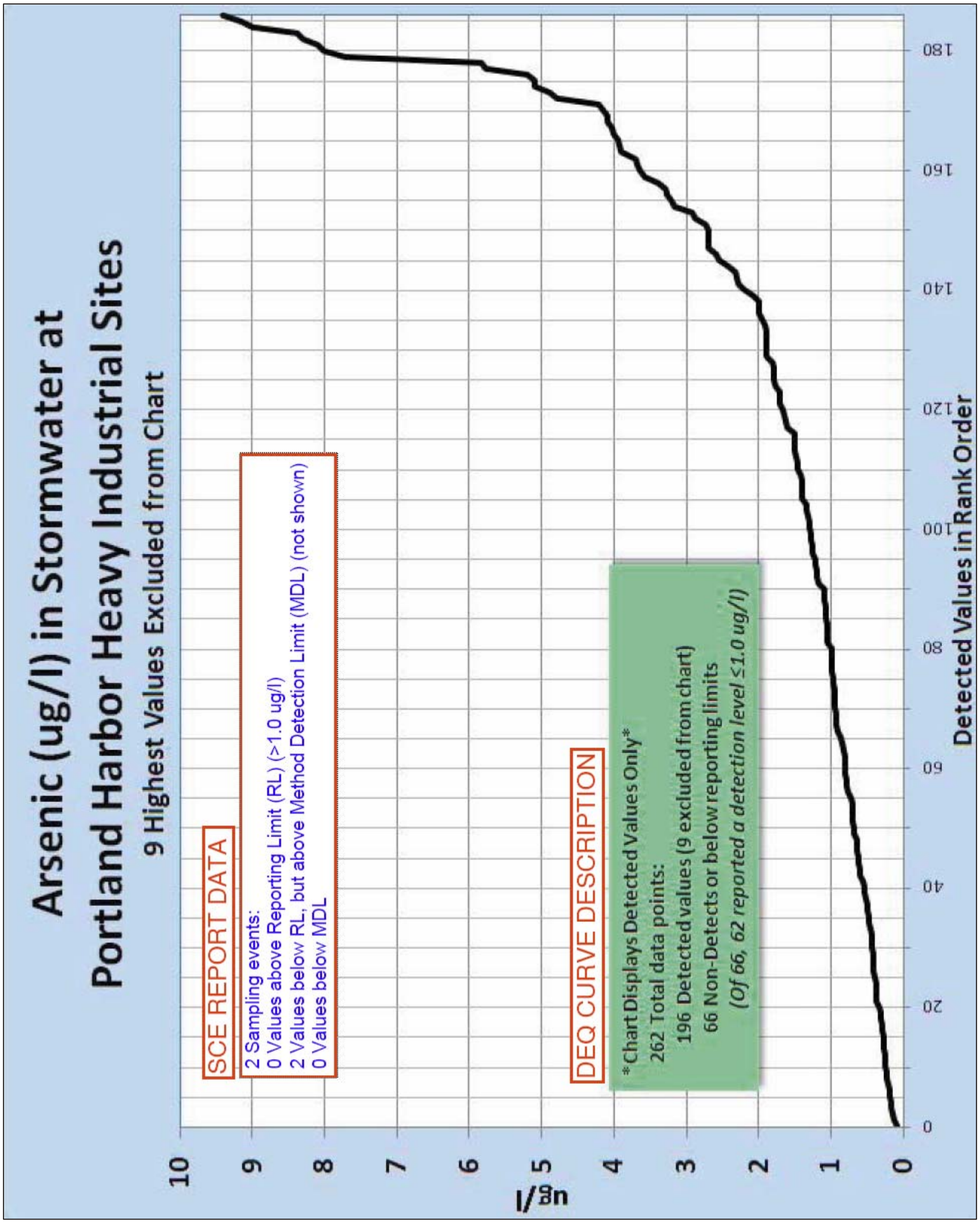
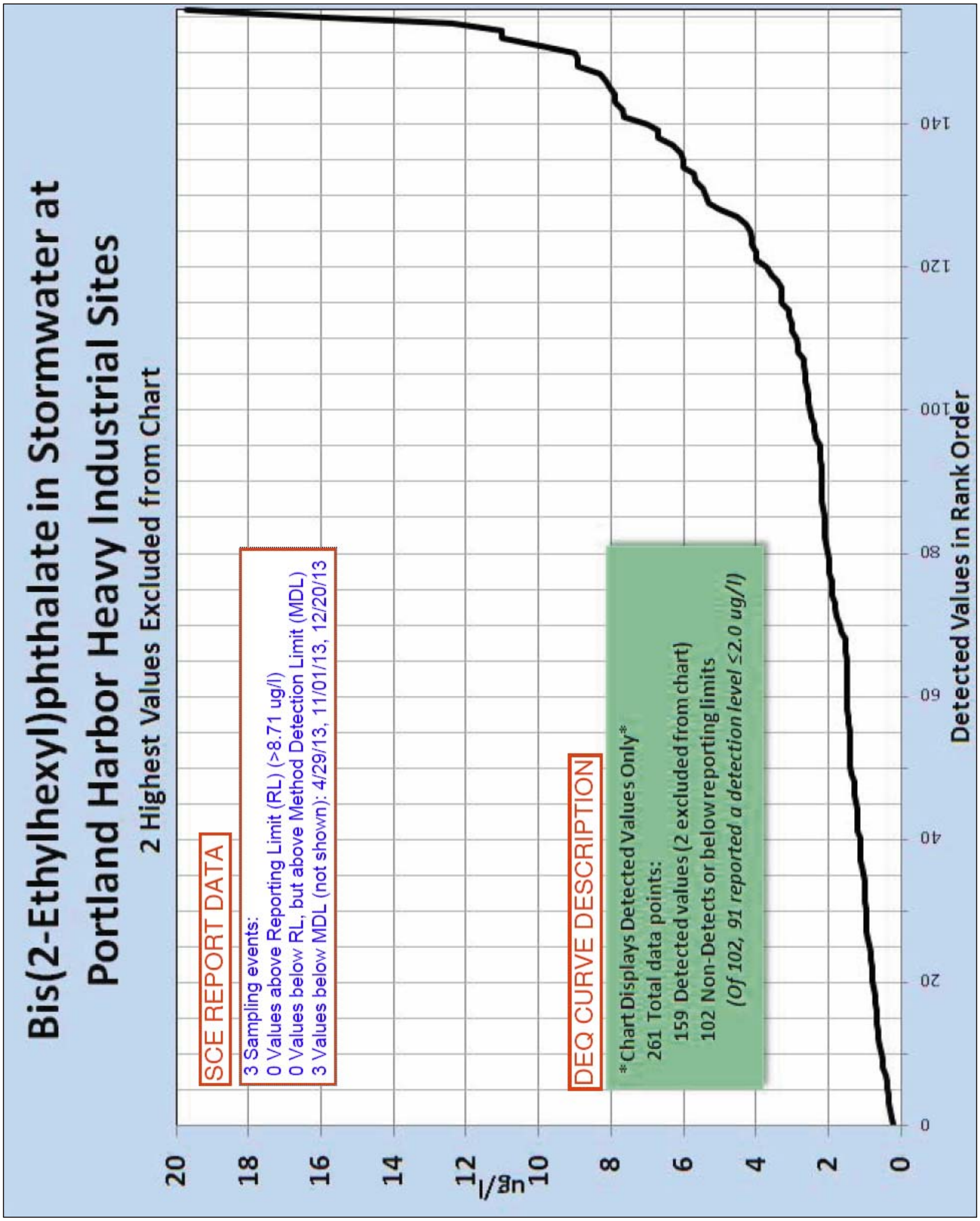
GROUNDWATER ELEVATION CONTOUR MAP

Figure 6



Data for DA3 Surface Drainage Area
OR DEQ 1200-Z Permit 107179

Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**ARSENIC** Portland Harbor Area Heavy Industrial Sites Chart DEQ Appendix E Guidance Stormwater Pathway Upland Sites	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 7A



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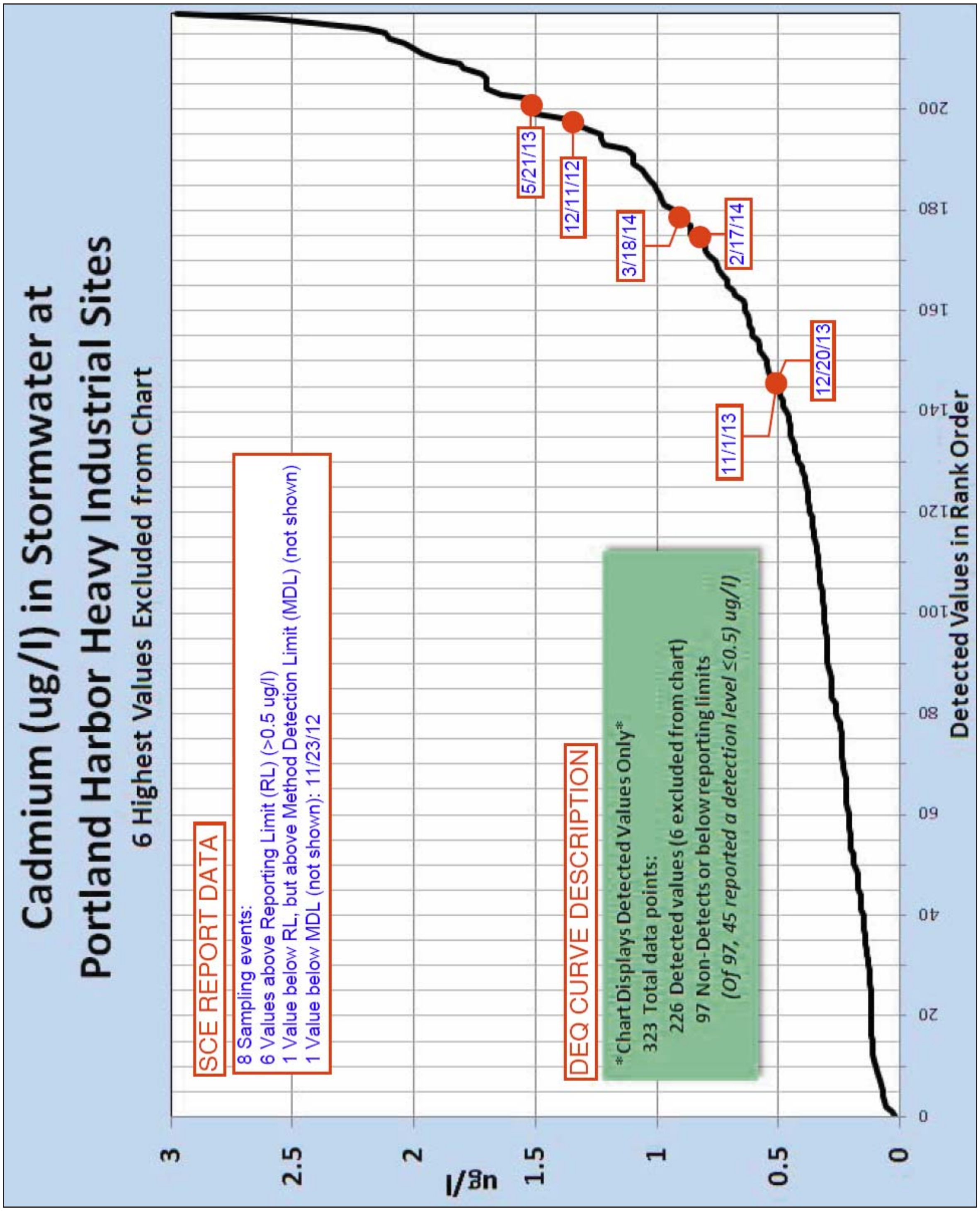

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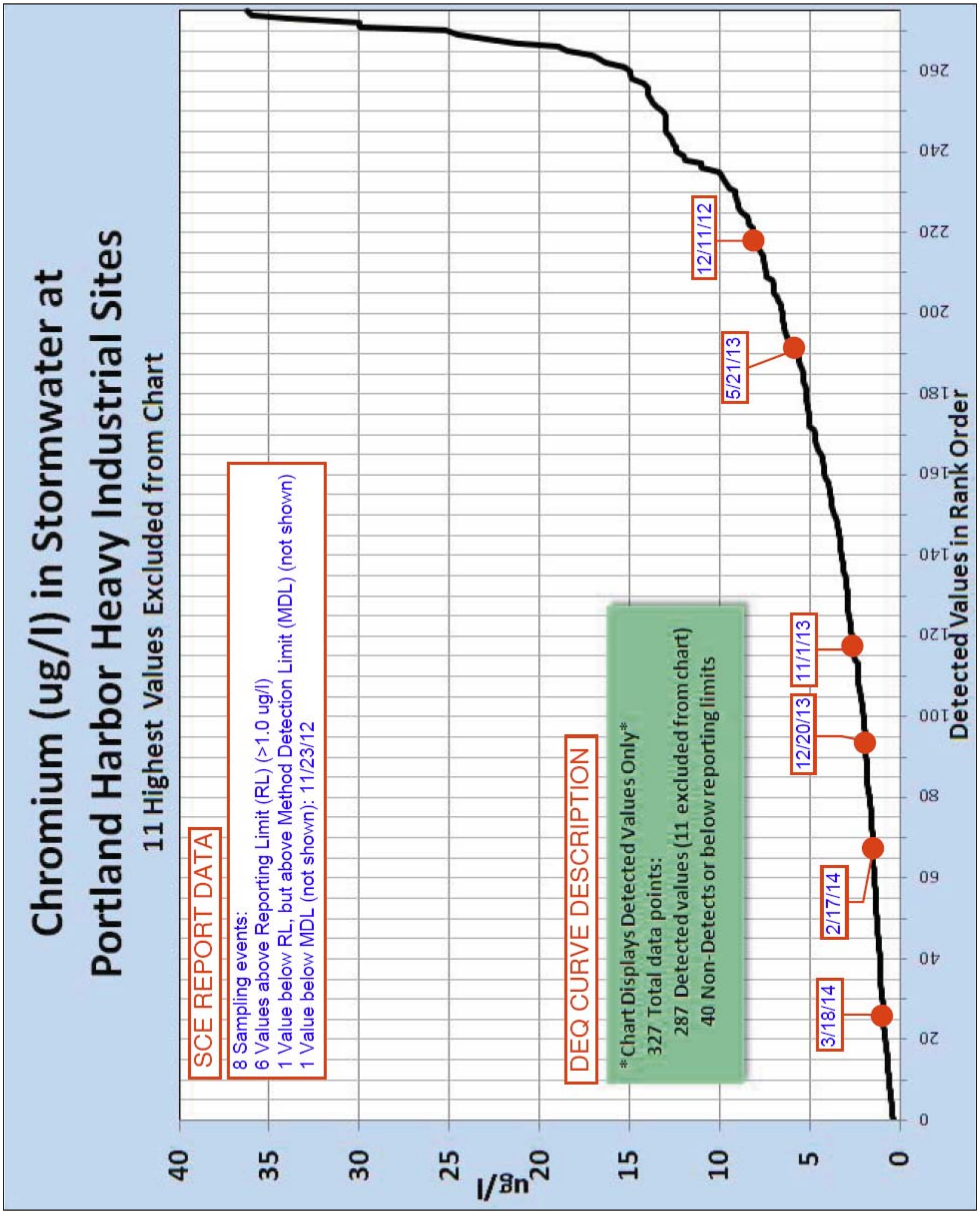
GeoPro	Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**CADMIUM** Portland Harbor Area Heavy Industrial Sites Chart DEQ Appendix E Guidance Stormwater Pathway Upland Sites	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 7C



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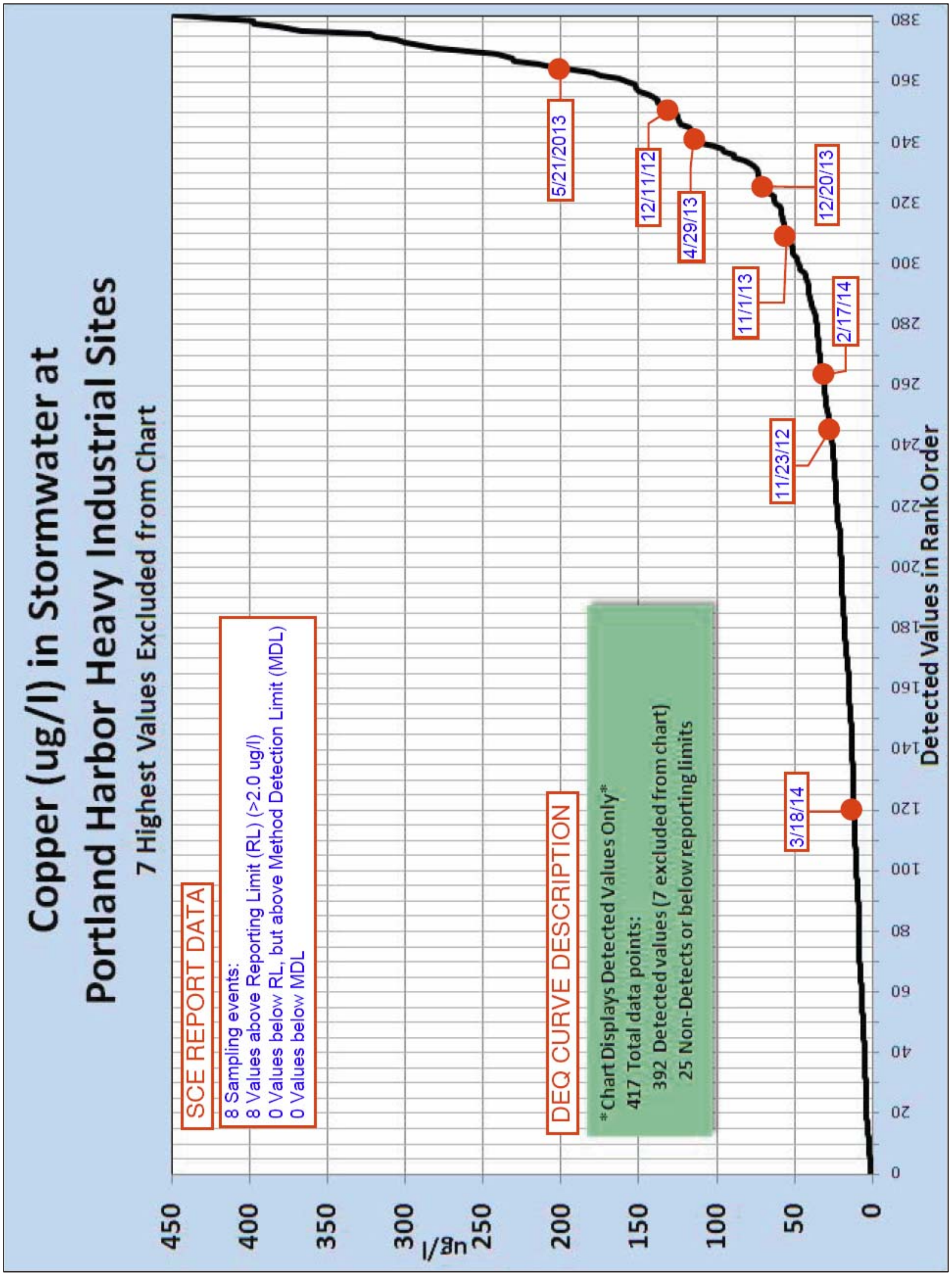
GeoPro — Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**CHROMIUM** Portland Harbor Area Heavy Industrial Sites Chart DEQ Appendix E Guidance Stormwater Pathway Upland Sites	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 7D



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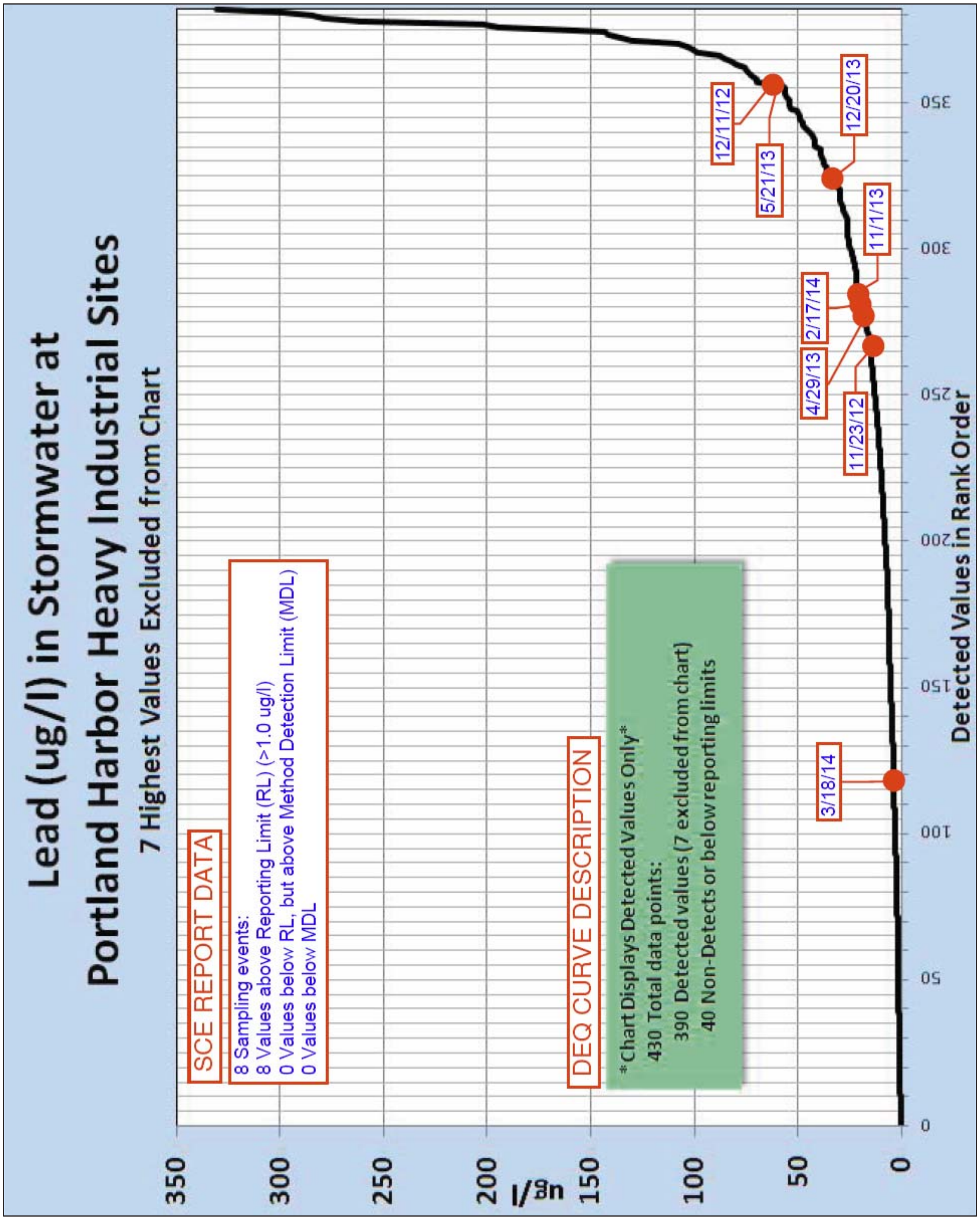

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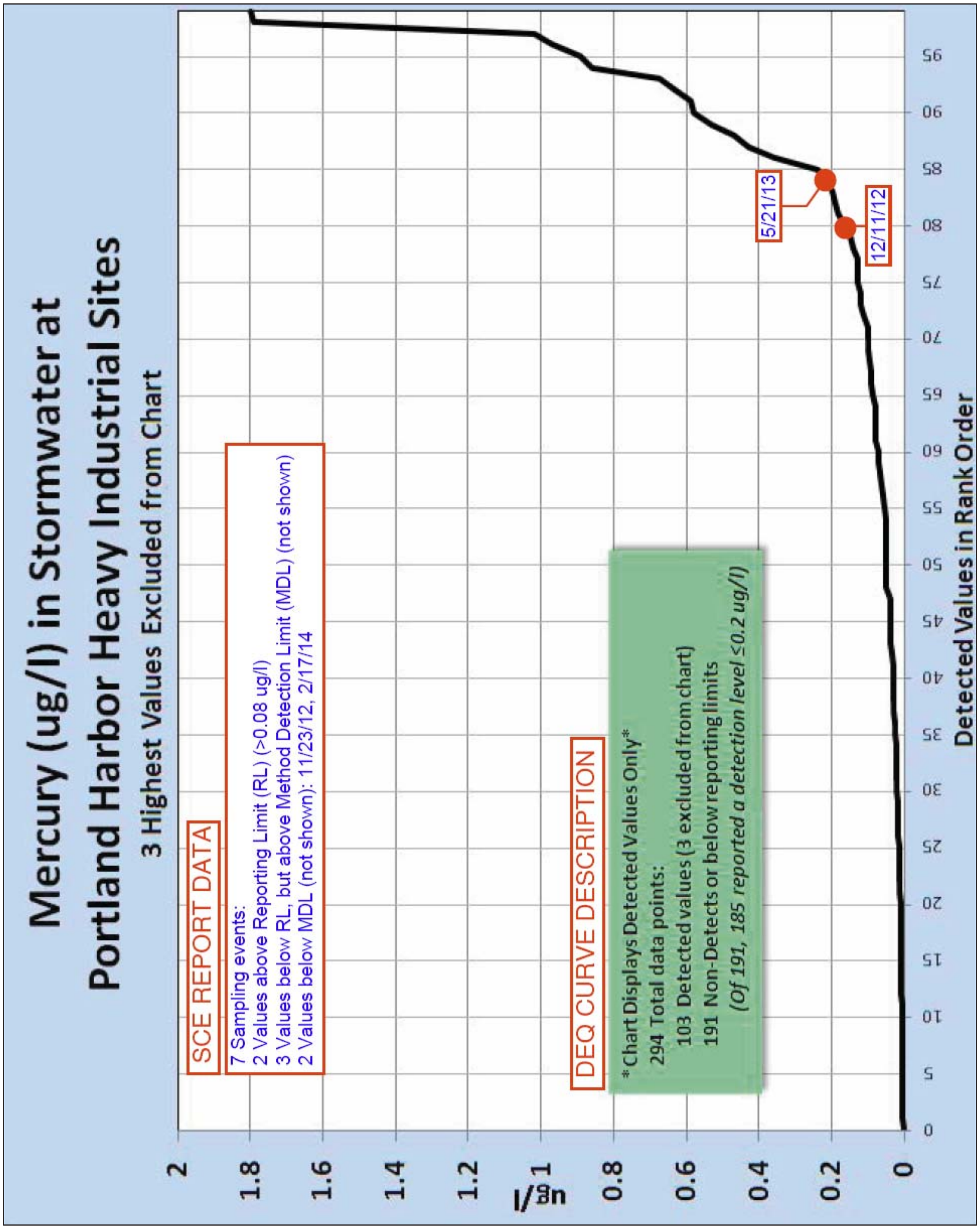

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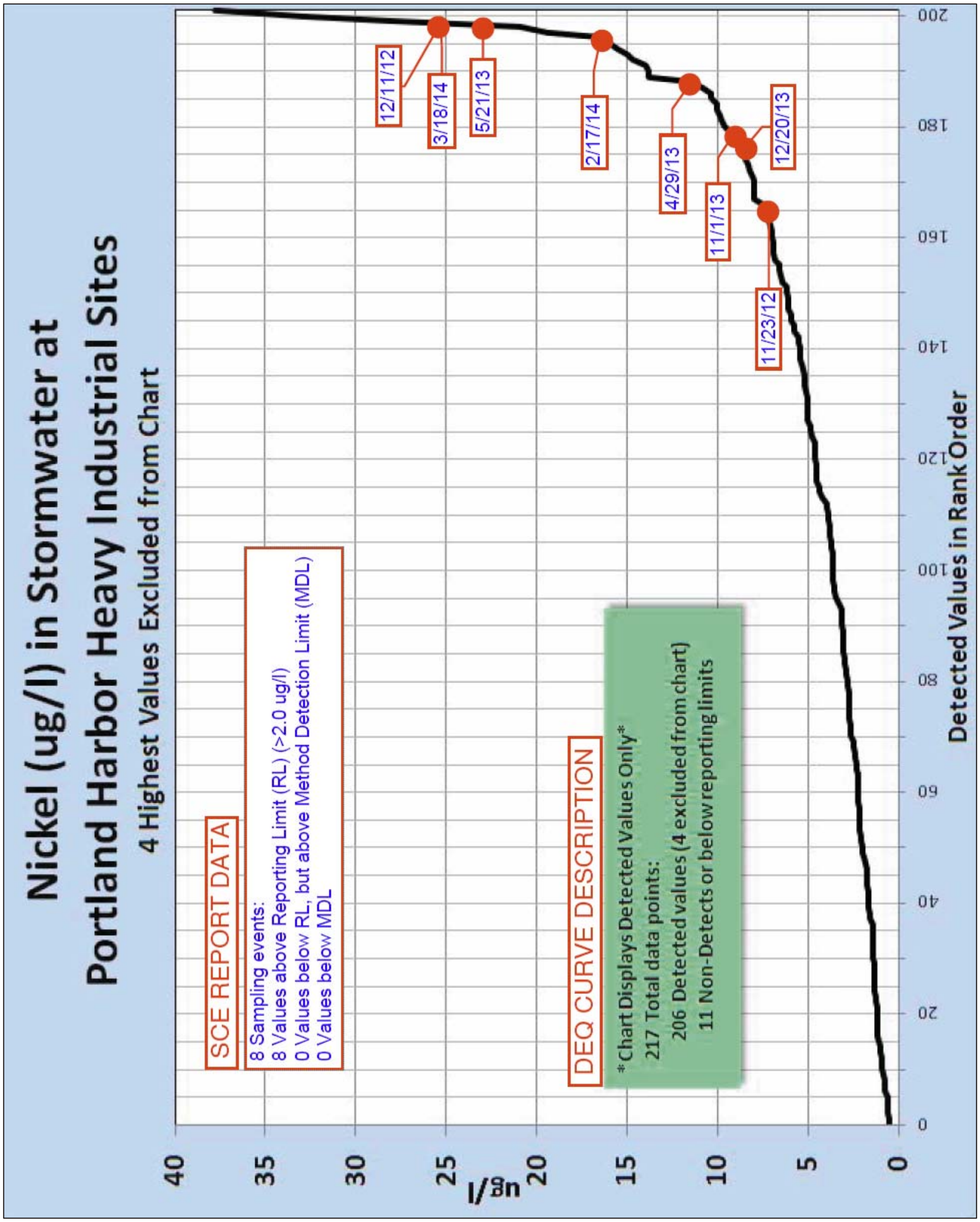

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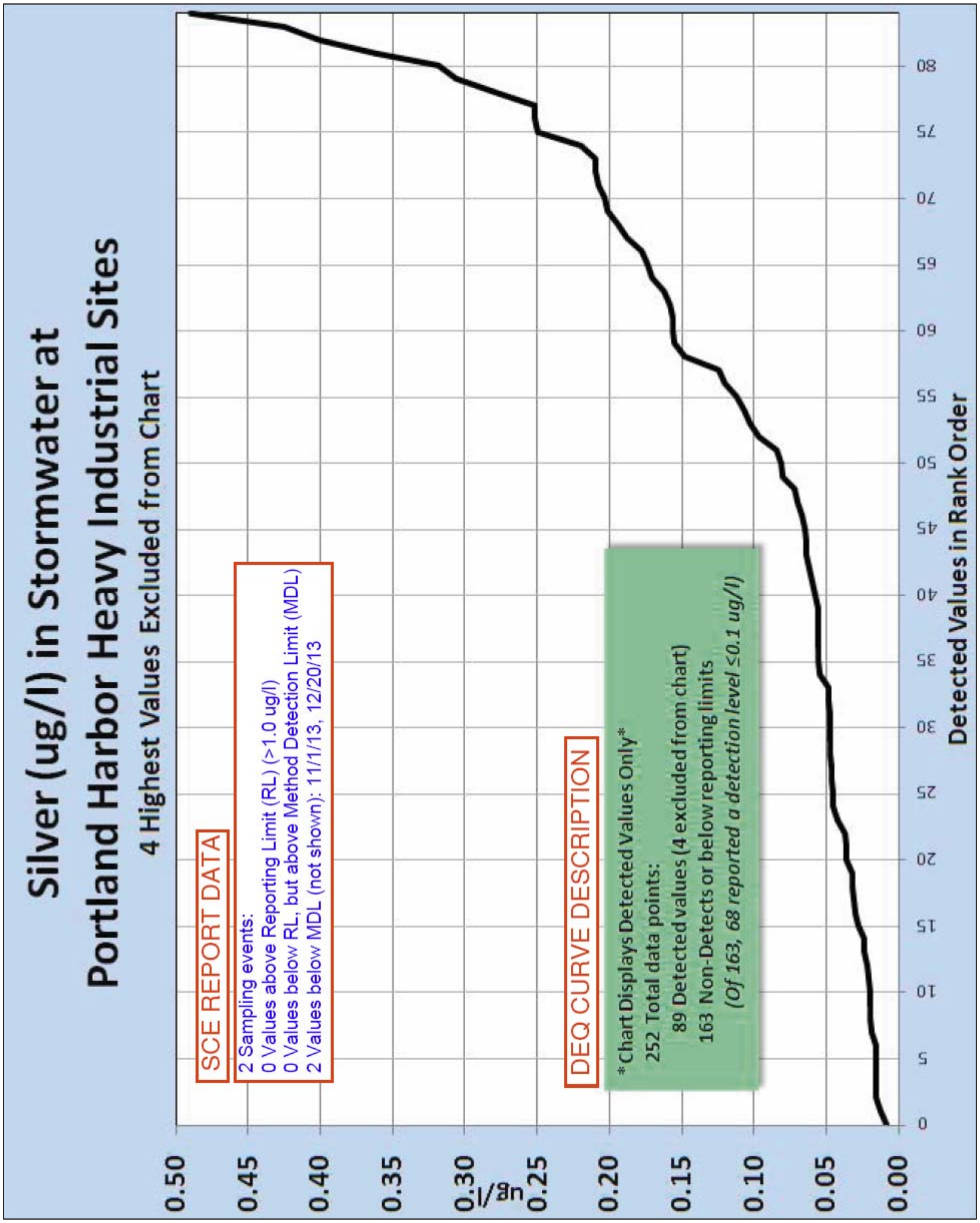

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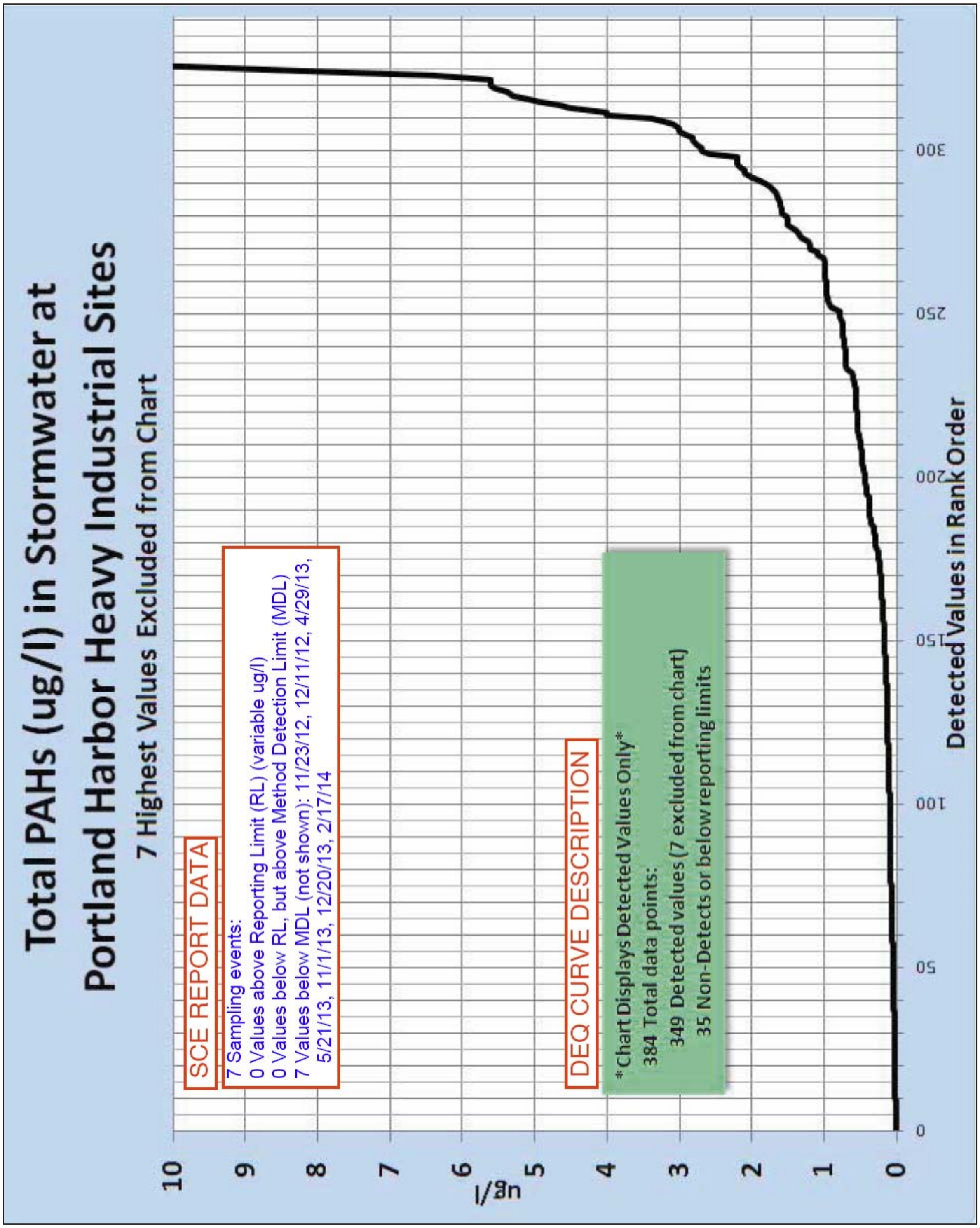

Data for DA3 Surface Drainage Area
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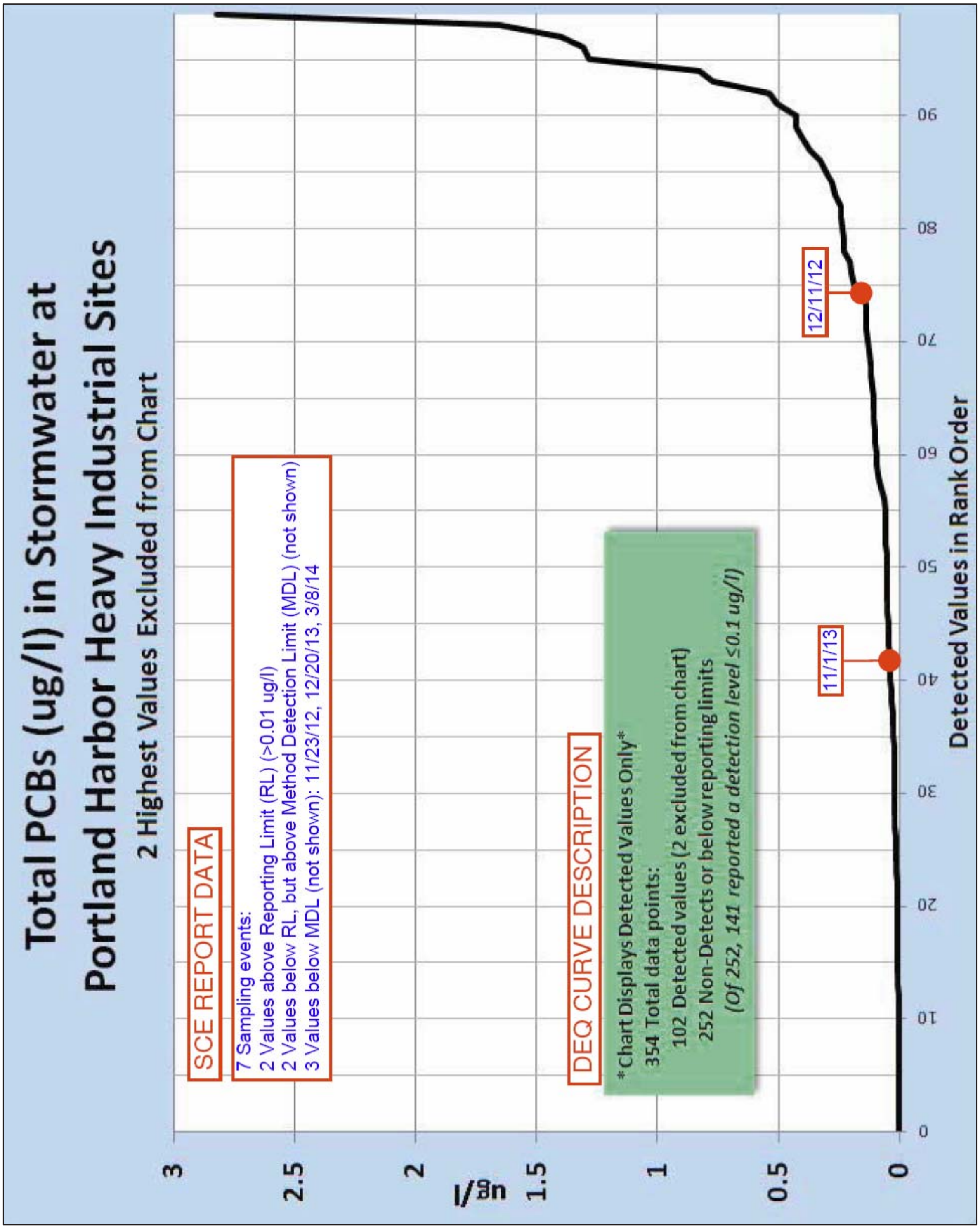
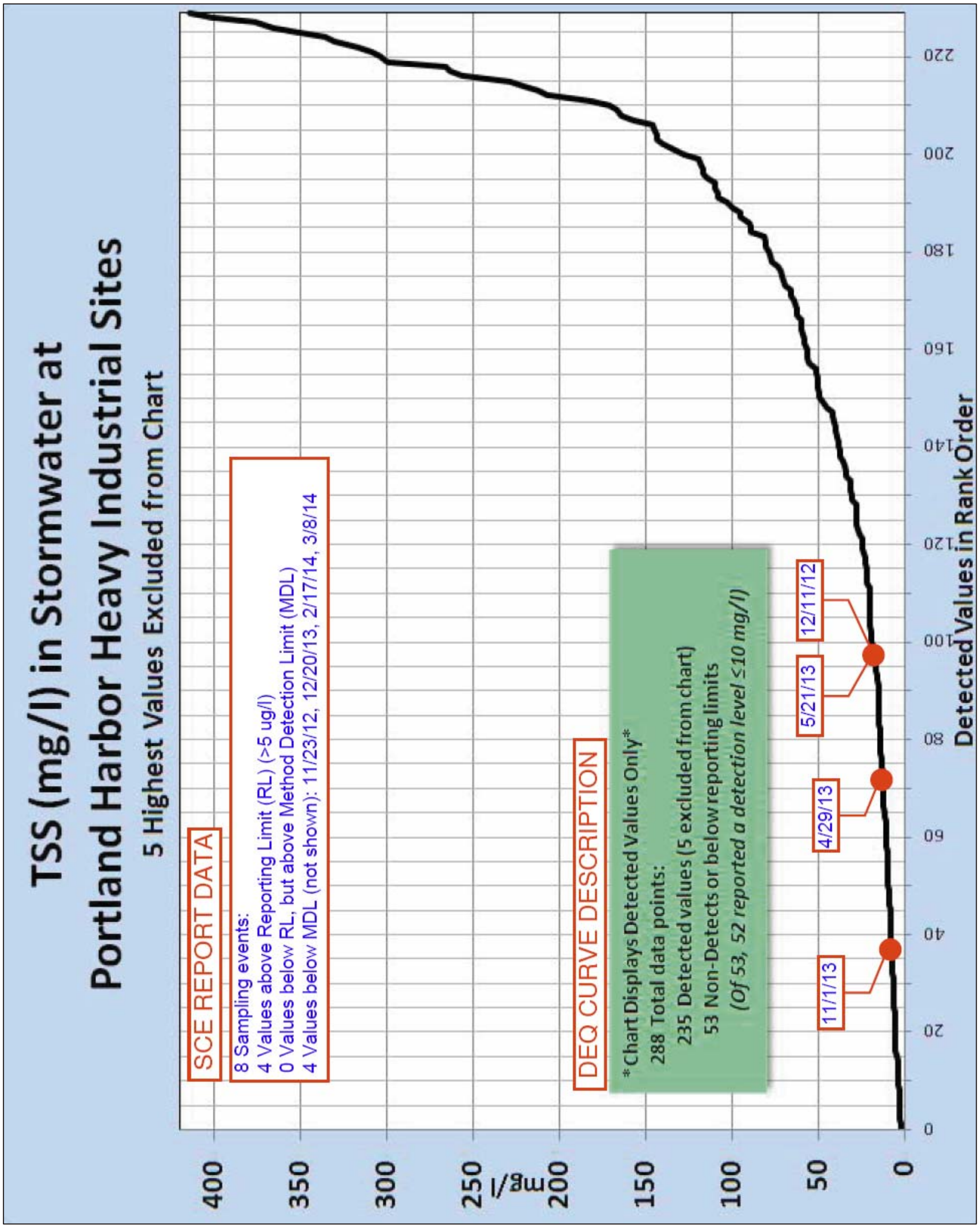


Data for DA3 Surface Drainage Area
OR DEQ 1200-Z Permit 107179

GeoPro	Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**TOTAL PCBs** Portland Harbor Area Heavy Industrial Sites Chart DEQ Appendix E Guidance Stormwater Pathway Upland Sites	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 7K



Data for DA3 Surface Drainage Area
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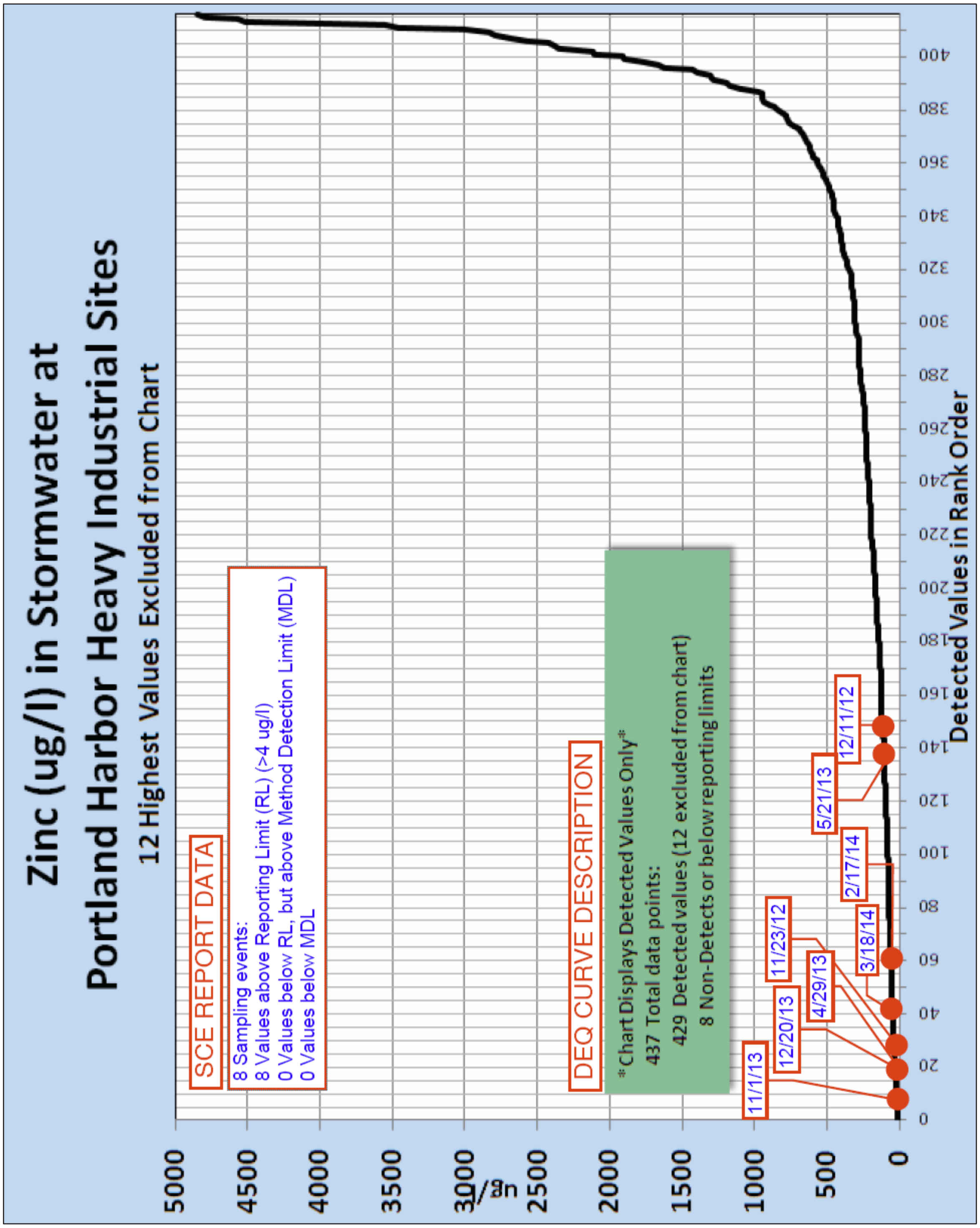

Data for DA3 Surface Drainage Area
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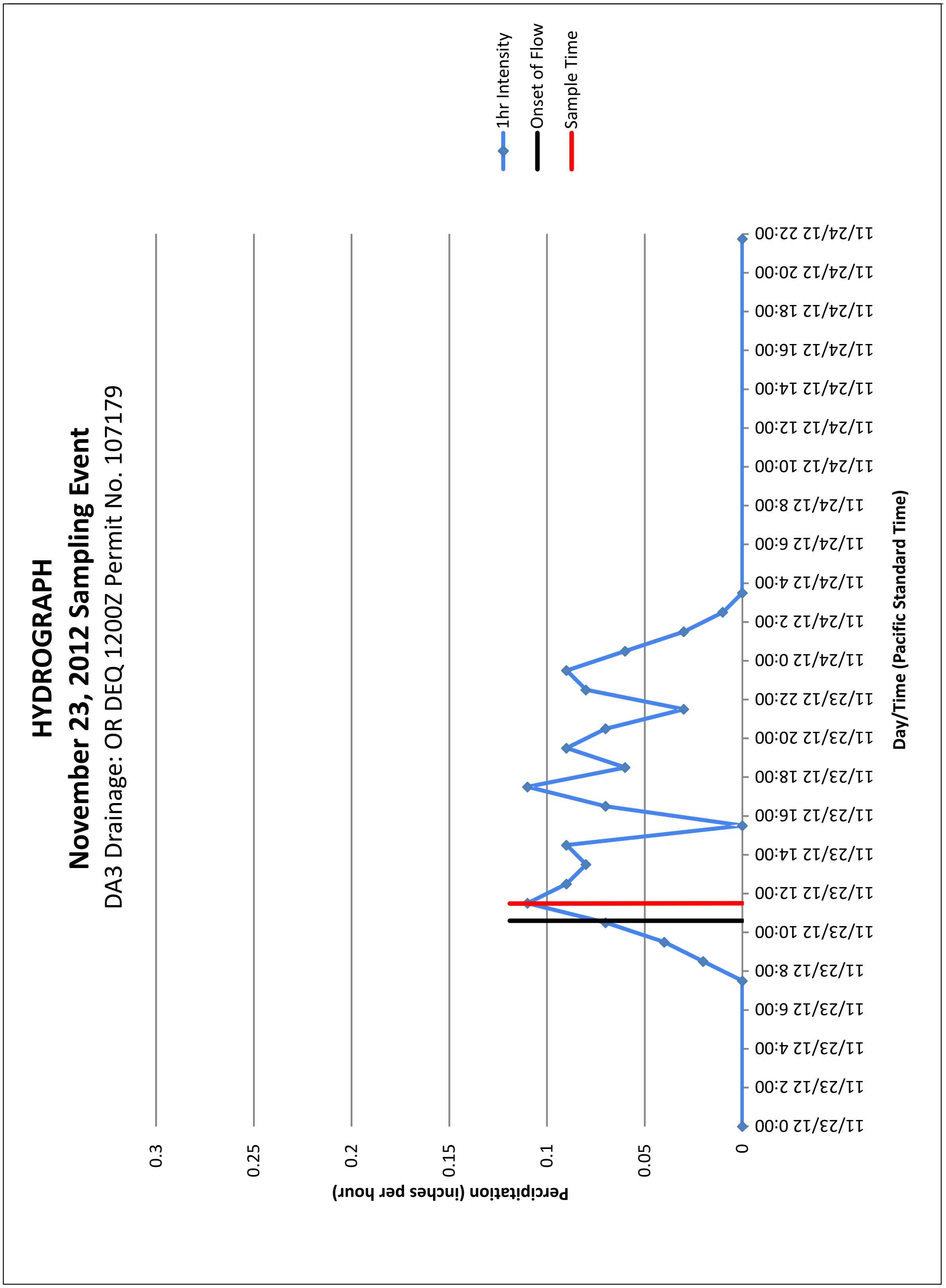
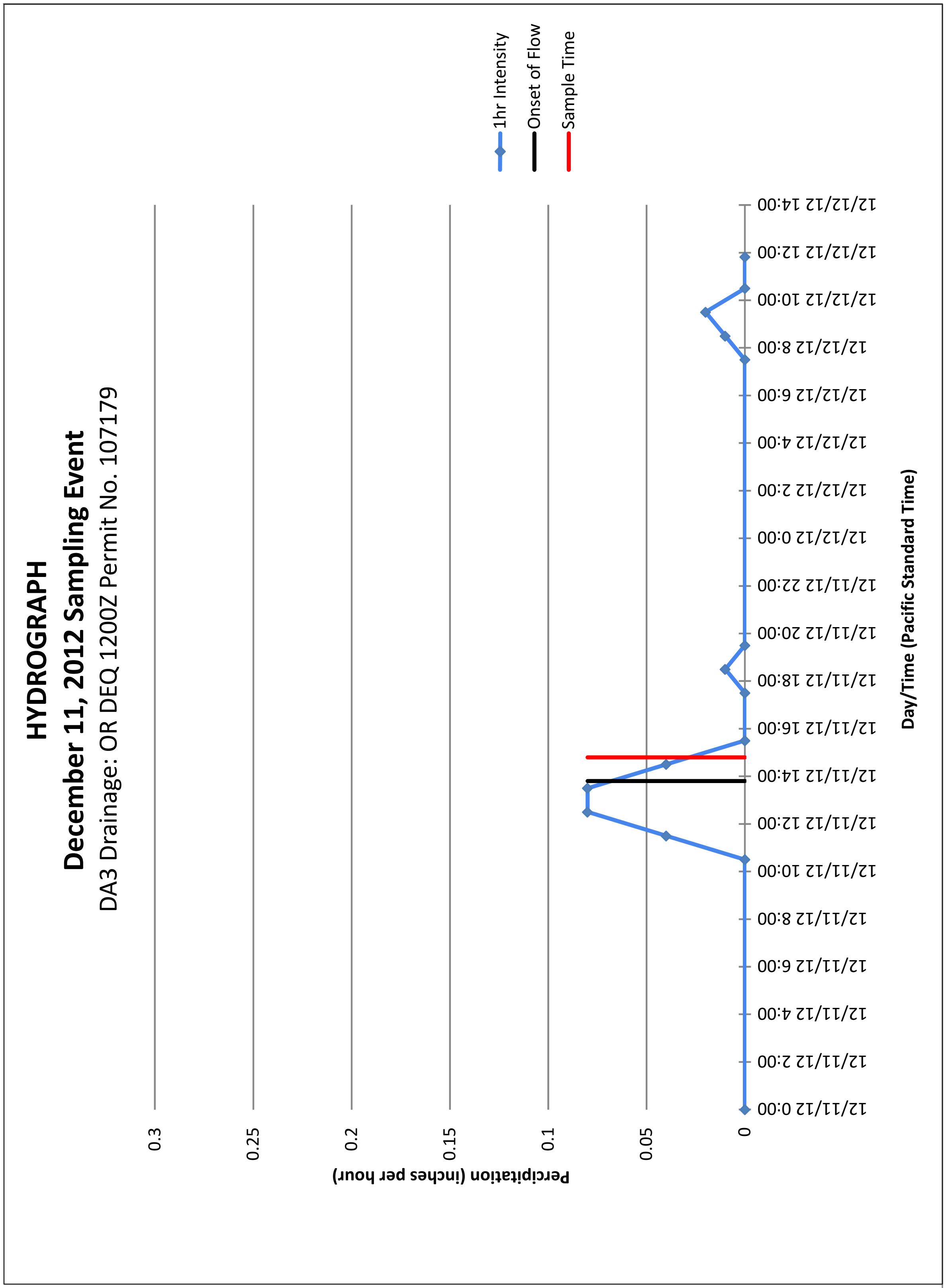


GeoPro Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**HYDROGRAPH** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 8A



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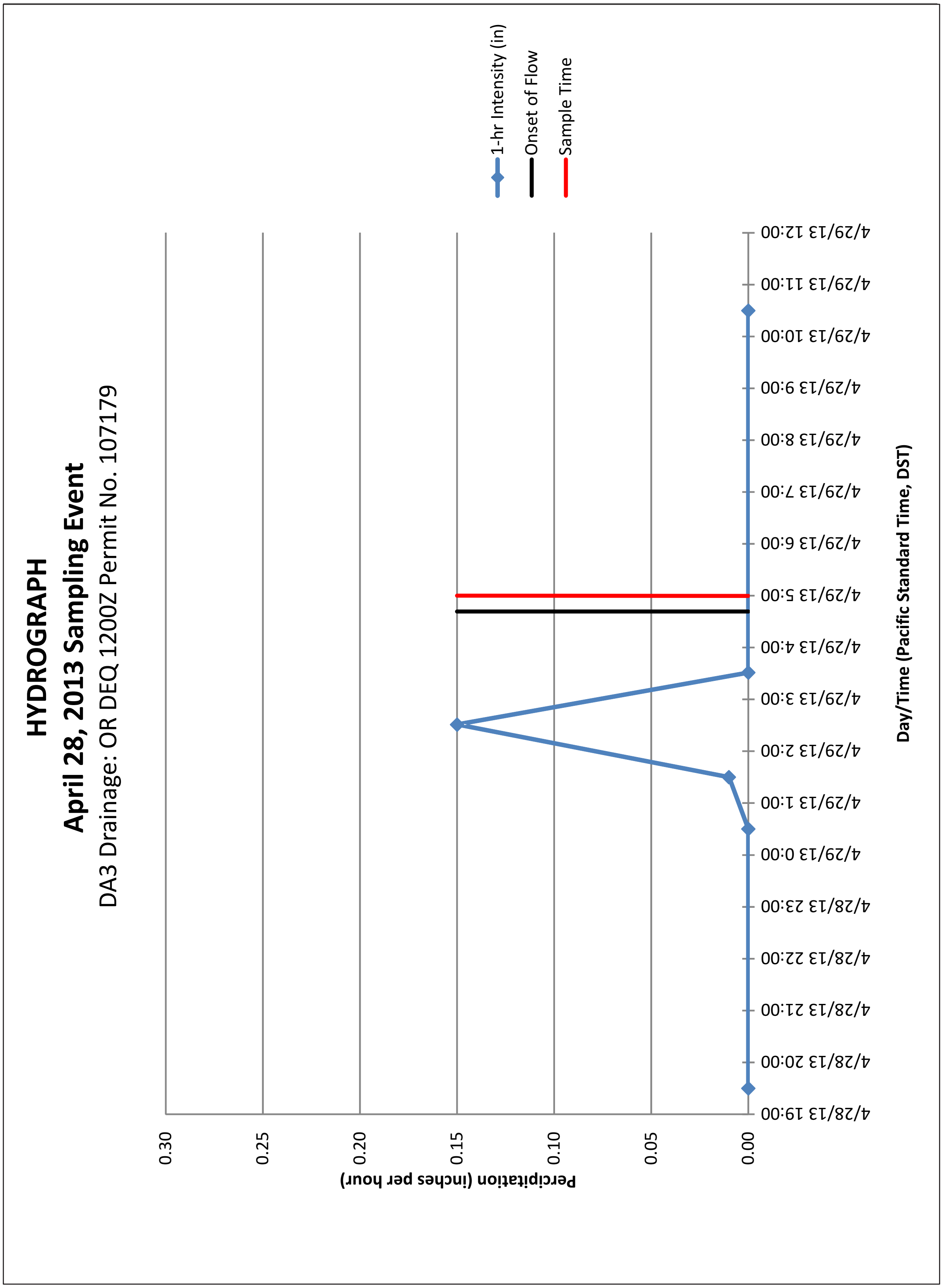

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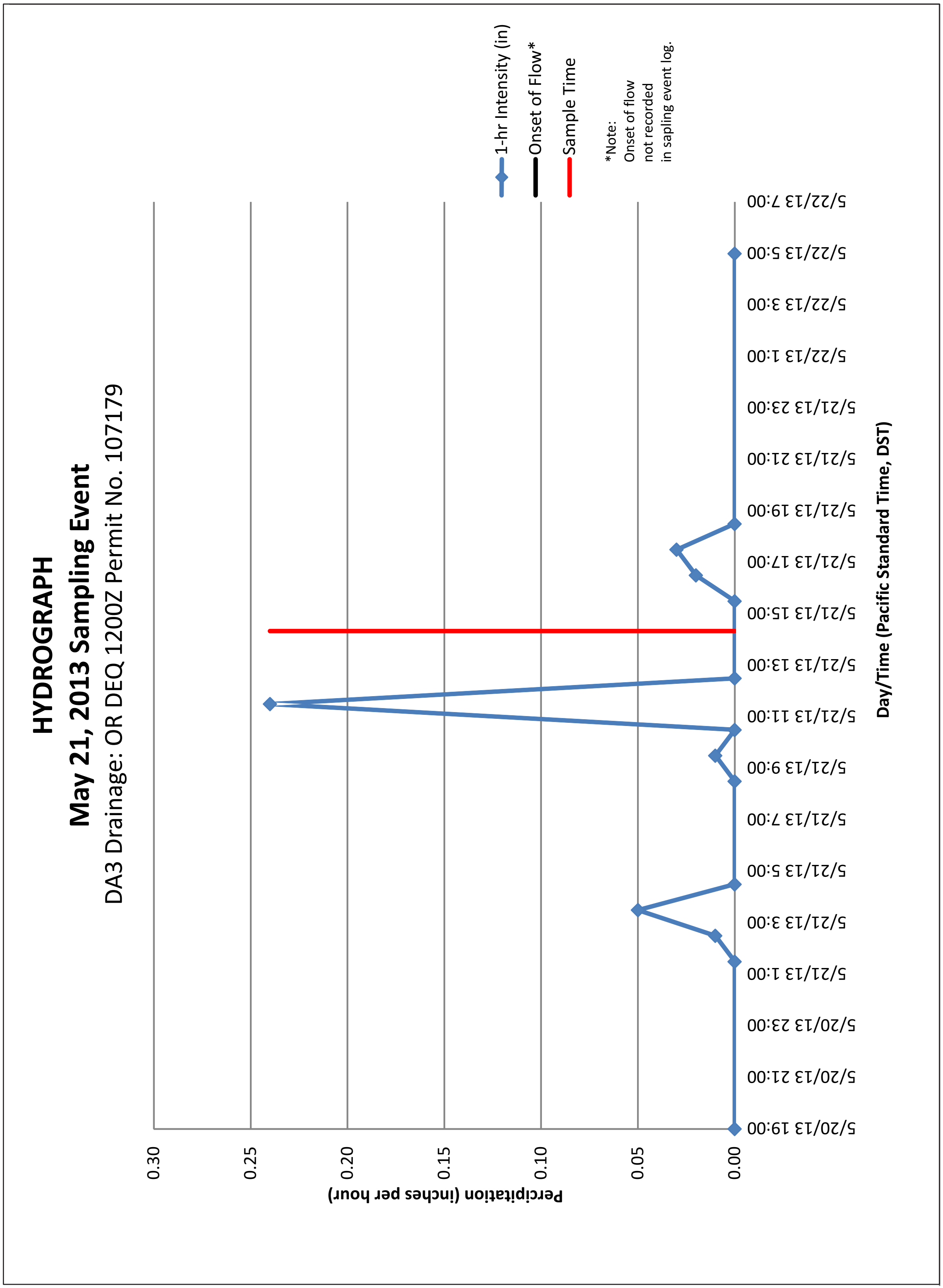
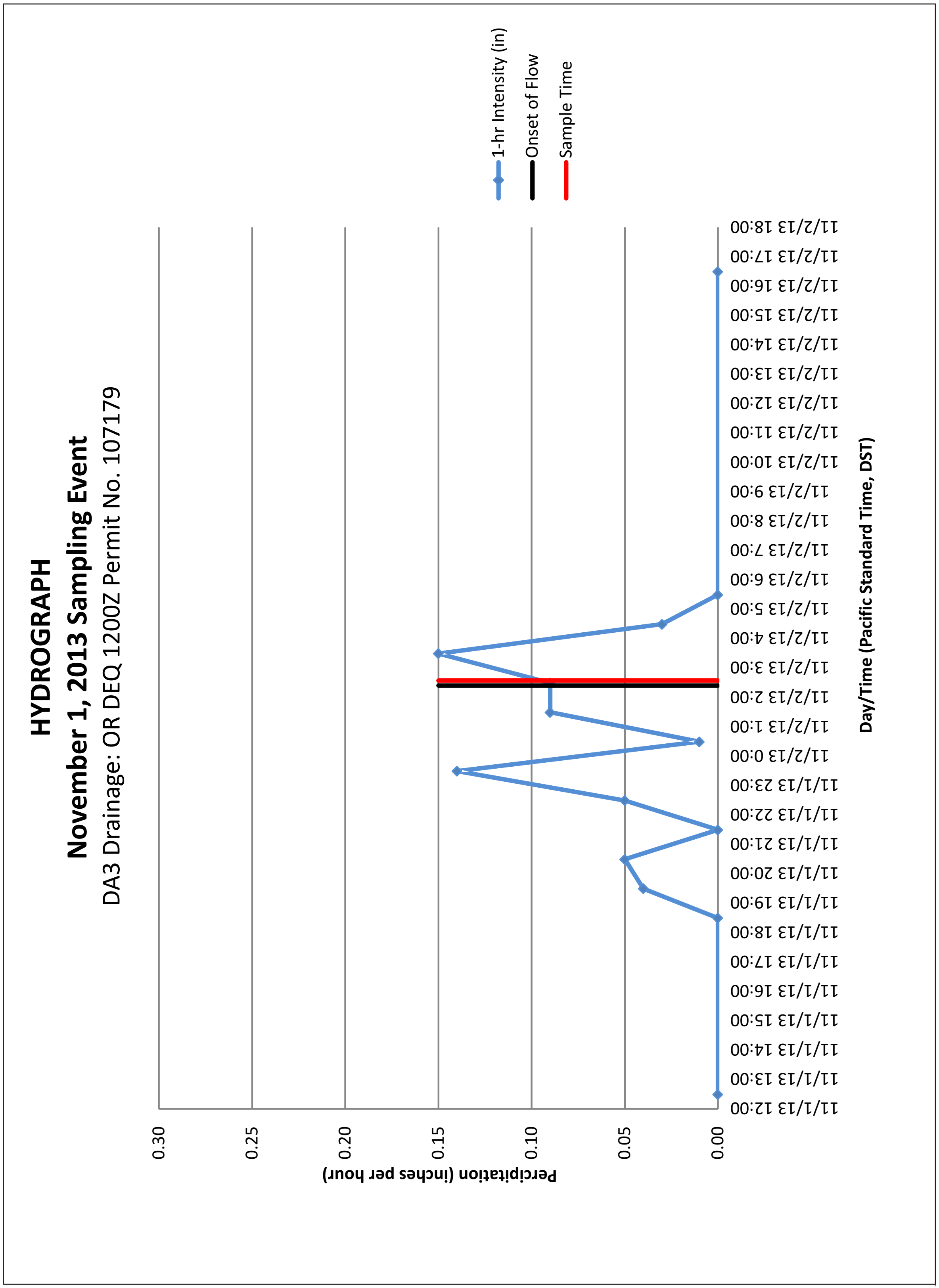


Prepared by GeoPro LLC	HYDROGRAPH	Calbag Metals Company Facilities	Figure
GeoPro Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**HYDROGRAPH** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 8D



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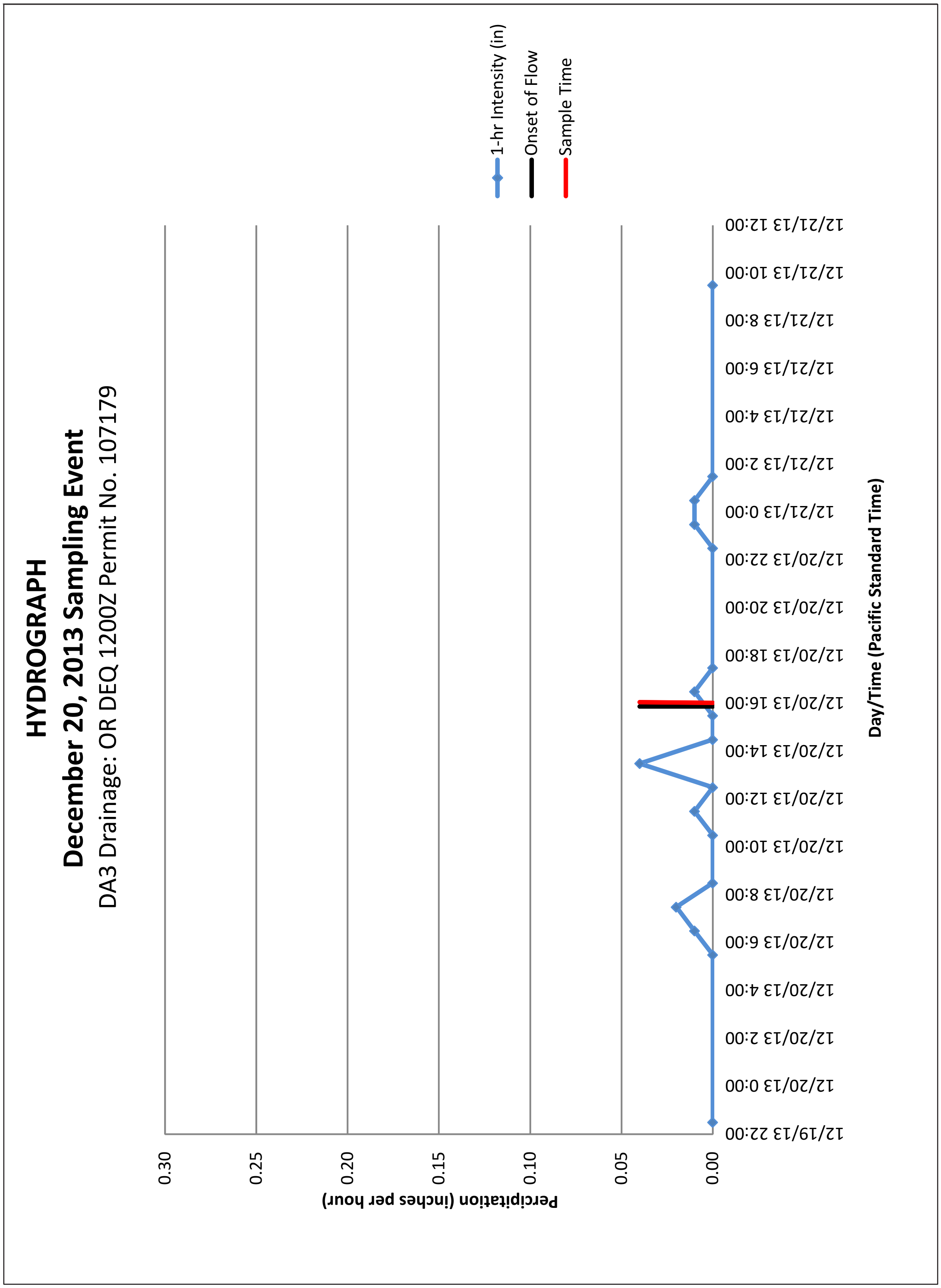
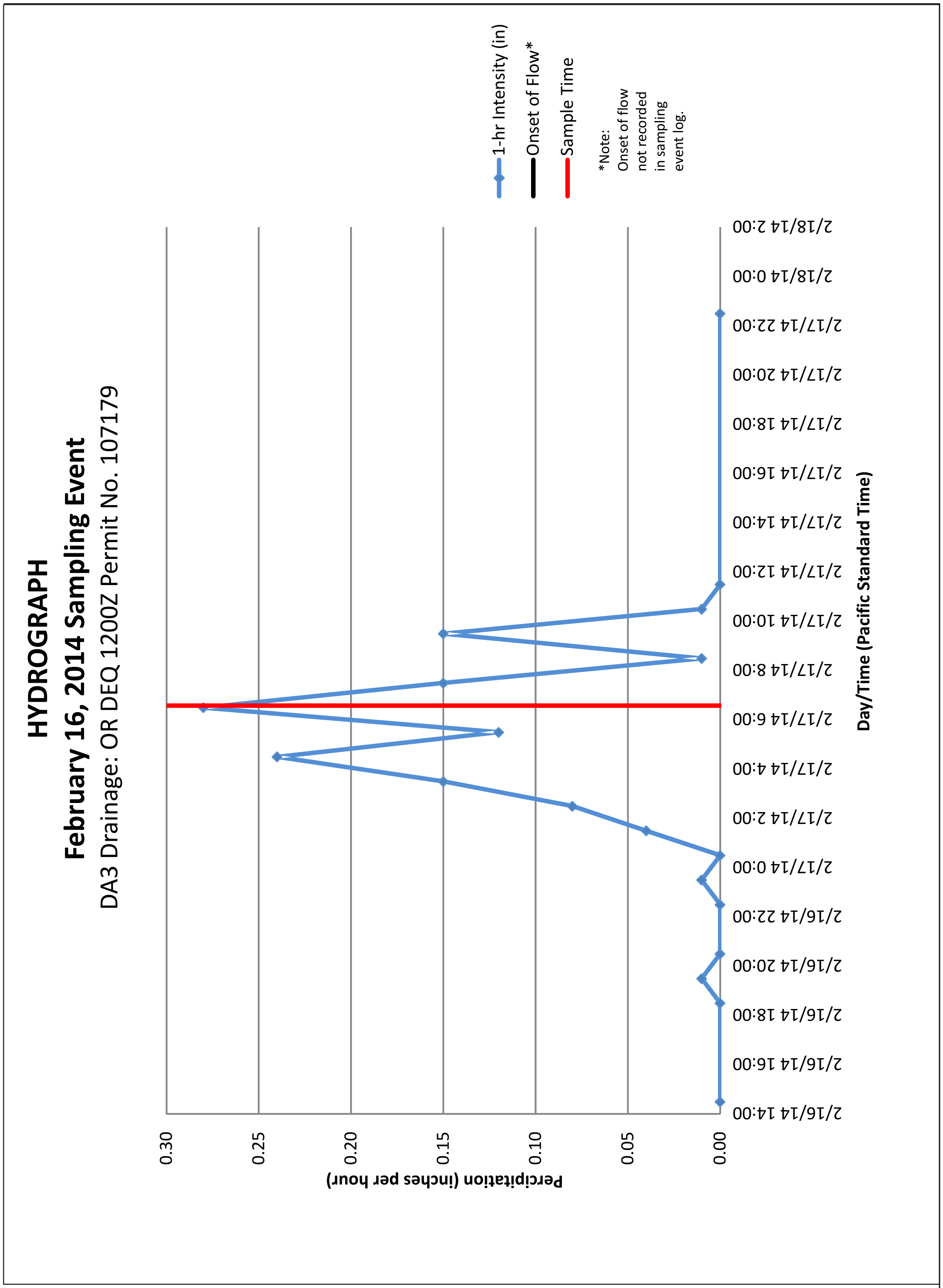
HYDROGRAPH
DA3 Surface Drainage Area
OR DEQ 1200Z Permit 107179

Calbag Metals Company Facilities
2495 and 2500 NW Nicolai St.
Portland Oregon

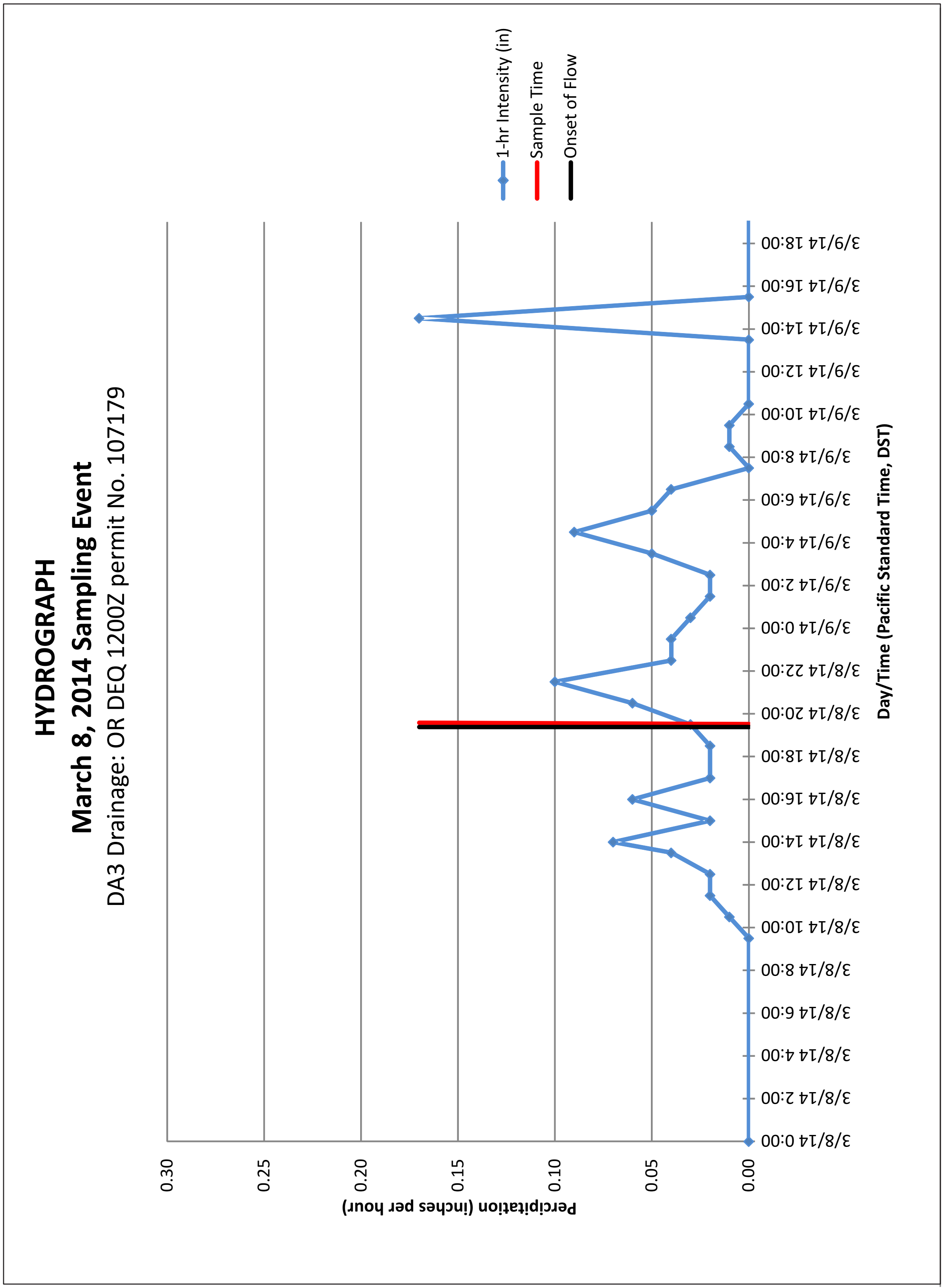
Figure
8E



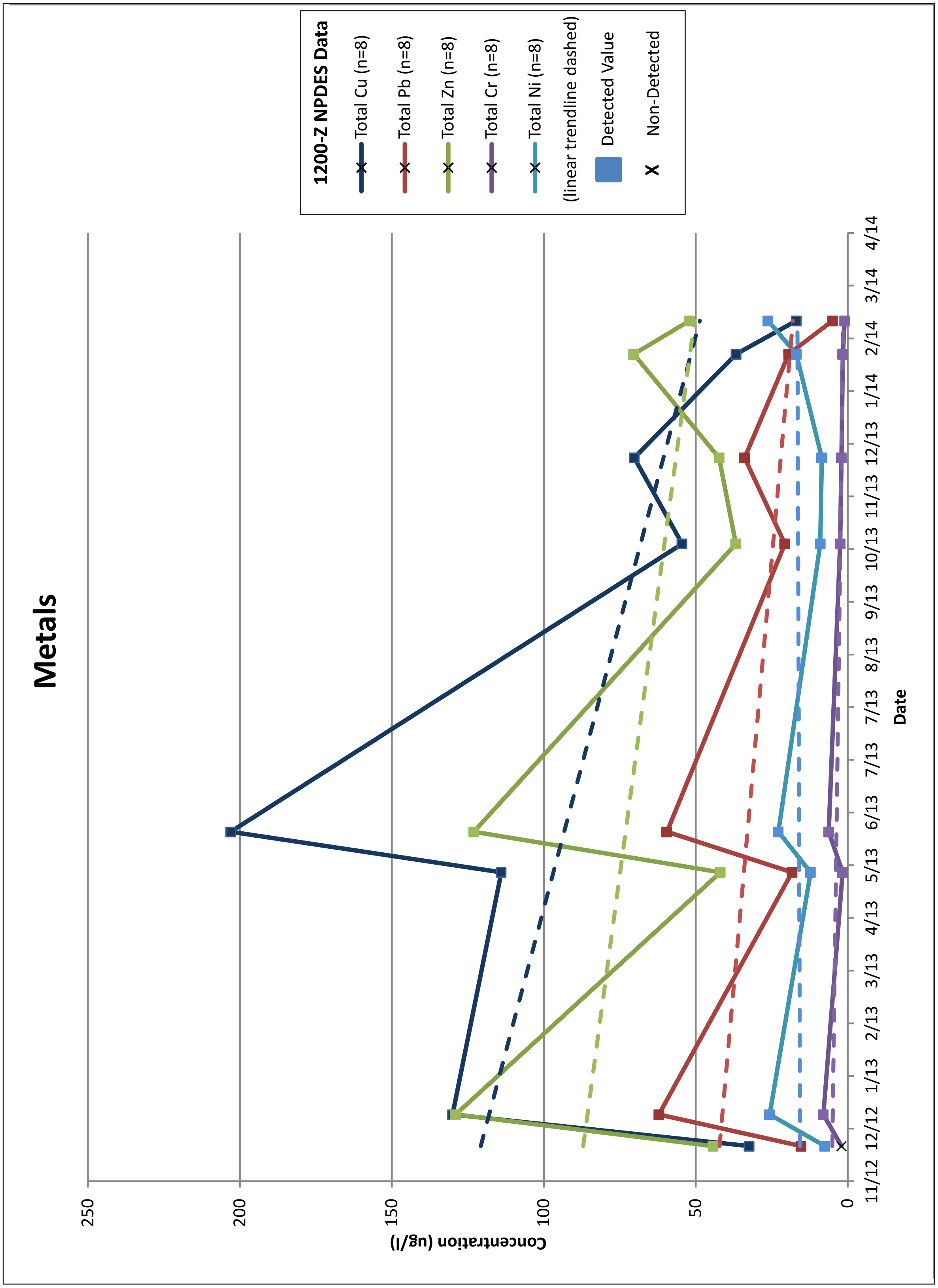
Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**HYDROGRAPH** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 8F



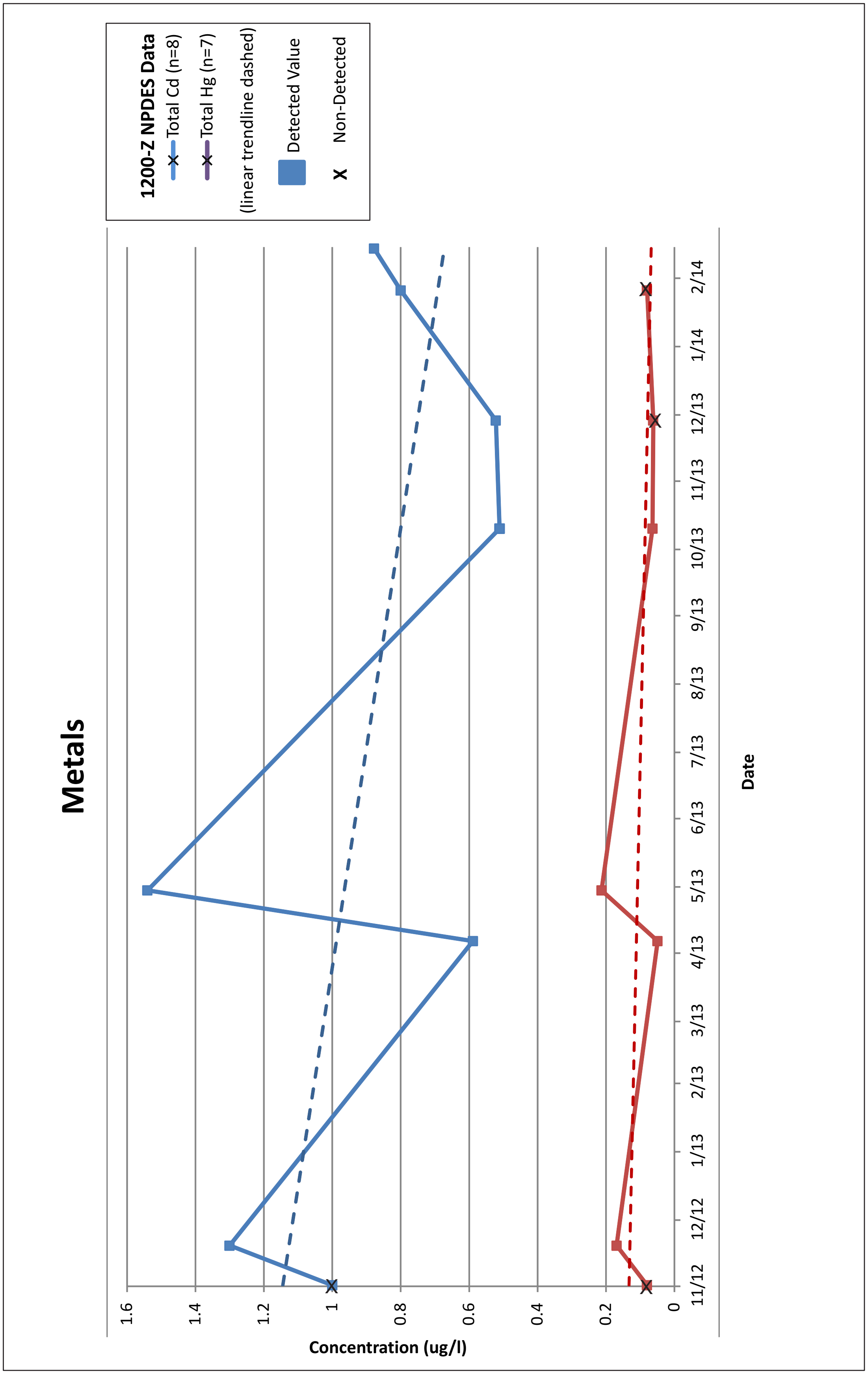
Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**HYDROGRAPH** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 8G



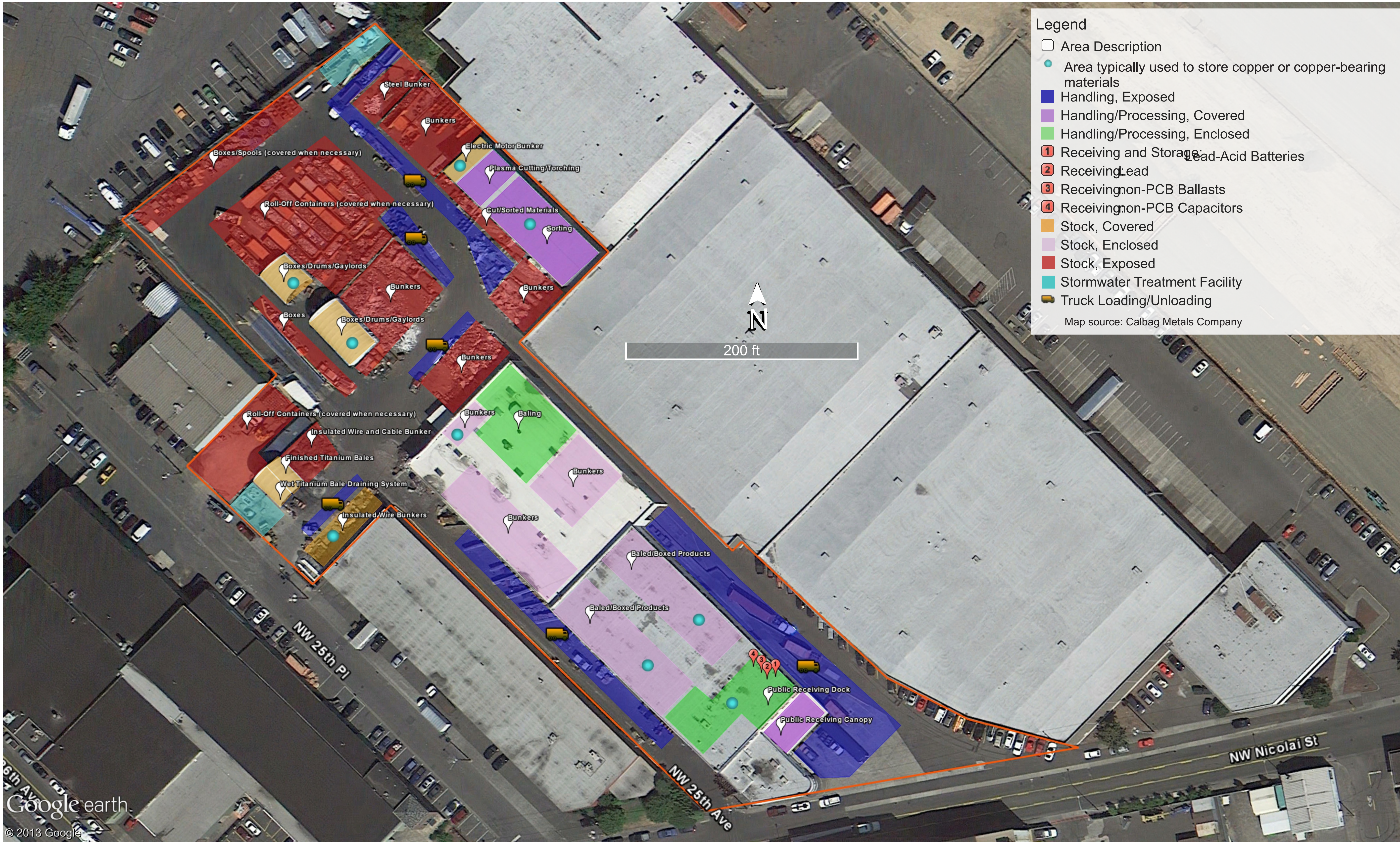
Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**HYDROGRAPH** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 8H



Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**METALS ANALYSES** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 9



Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	**METALS ANALYSES** DA3 Surface Drainage Area OR DEQ 1200Z Permit 107179	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	Figure 10



Prepared by **GeoPro LLC** PO Box 26 Battle Ground, WA 98604 geopro@comcast.net	Stormwater Source Control Evaluation Report	**Calbag Metals Company Facilities** 2495 and 2500 NW Nicolai St. Portland Oregon	MATERIALS AND HANDLING	Figure 11

Appendix A
Environmental Site Assessment Subsurface Report
2500 NW Nicolai Street, May 2009

ENVIRONMENTAL SITE ASSESSMENT SUBSURFACE

CALBAG FACILITY
2500 NW NICOLAI STREET
PORTLAND, OREGON

Prepared for

Mr. Jeffrey Wolfstone, Attorney

On Behalf of

His Clients

Prepared by

Blue Mountain Environmental Consulting, Inc.
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Richland, Washington 99352

with

GeoPro Geologic Services LLC
PO Box 26
Battle Ground, Washington 98604

May 2009

Contents

Figures

Tables

1 INTRODUCTION

1.1 Purpose

This Report is CONFIDENTIAL and prepared for the exclusive use of the Client.

This Report is prepared for Mr. Jeffrey Wolfstone, Attorney, on behalf of his clients for their property located at 2500 NW Nicolai Street, Portland, Oregon ("Site"). This Environmental Site Assessment ("ESA ") is based on recommendations contained in a Phase I ESA dated August 29, 2008.

The purpose of this subsurface environmental assessment is to evaluate possible recognized environmental conditions for the purpose of providing sufficient information regarding the nature and extent of potential contamination to assist in making informed business decisions about the Site. This Report cannot eliminate all uncertainties regarding chemical analysis that may or may not represent surface and subsurface conditions. Additional assessment may be able to reduce any uncertainty.

1.2 Scope of Services

This work is performed to determine whether contaminants, primarily metals, have impacted shallow soil and groundwater within the Site. The following are specific objectives:

1. Perform a hydrogeologic characterization of shallow groundwater within the property by installing groundwater monitor wells and analyzing groundwater for certain chemicals.
2. Evaluate the potential for contaminated soil within the Site by analyzing selected soil samples within the Site and beneath a building.

2 BACKGROUND

2.1 Site Description

The Site is located at 2500 NW Nicolai Street, Portland, Oregon (see Figure 1) which includes a building used as a metal recycling warehouse. The 30,000 square-foot building consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof .

The Site is operated by Calbag Metals Company ("Calbag"). Calbag is a nonferrous scrap metal company which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals essentially include aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or PCBs. Fabrication does not occur at the Site.

2.2 Physical Setting

The Site consists of 0.90 acres developed with the industrial building, and 0.23 acres of undeveloped land. The ground surface at the site slopes gradually to the northeast. Ground cover consists primarily of a building and asphalt parking. The Site can be accessed from the north via an entrance from N.W. Nicolai St. The site is zoned industrial.

The Site is located within Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). Quaternary alluvium deposits of river deposits of silt, sand and organic-rich clay separate the Site from the Willamette River. The geologic map depicts Holocene artificial fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill ends that were deposited to the north of the Site.

2.3 Site History

Historical records indicate the building on the Site was constructed on undeveloped land in 1949, and has been occupied since that time. A Sanborn map dated 1969 describes the occupant of the building as "Junk Warehouse". Additional site history is described in the Phase I ESA.

2.4 Adjacent Property Use

Adjacent properties are shown in Figure 3.

Rose City Textiles, located north of the Site across NW Nicolai St., is a fabric warehouse in which fabric is sized, cut and delivered.

ESCO occupies the steel foundry building to the east and south of the Site.

Rejuvenation occupies an asphalt parking lot and building to the west of the Site in which brass parts are manufactured.

2.5 Previous Assessments

A Phase I Environmental Site Assessment ("ESA-I") was prepared for the Site by Blue Mountain Environmental Consulting ("BMEC") on August 29, 2008.

The ES-I report states that the identification of recognized environmental conditions in connection with the Site may impose an environmental liability on owners or operators of the site, reduce the value of the site, or restrict the use or marketability of the site, and therefore, further investigation may be warranted to evaluate the scope and extent of potential environmental liabilities.

Research into the areas surrounding the site indicates heavy industrial use currently and in the past. Based on the nature of operations conducted by Calbag, the ESA-I report concluded that an "investigation should be conducted to investigate soil conditions at the site." The proposed investigation was extended to include groundwater conditions.

3 FIELD ACTIVITIES

3.1 Sampling Plan

The purpose of the sampling plan is to characterize the soil and groundwater with a series of borings. Selected borings were drilled to depths above the water table to only collect soil samples for analysis, and other borings were drilled below the water table to install monitor wells and collect soil and groundwater samples. Analytical results were then compared to appropriate screening criteria to evaluate threat to ecological and human receptors.

Borings completed to collect only soil samples are numbered B-7 through B-9. Groundwater monitoring wells are numbered MW-4 through MW-6. The drilling locations are shown in Figure 4.

The rationale for drilling locations are:

Table 1 – Drilling Location Rational

Boring/Well	Location	Objective	Sample Depths (ft)
B-7	Beneath 2500 building	Shallow soil north under building and near northern parcel boundary	3, 6, 9
B-8	Within alley between building and ESCO building	Shallow soil east of building, high traffic area	4, 8, 12
B-9	Beneath 2500 building	Shallow soil central under building	3, 6, 9
MW-4	Within alley between building and ESCO building	Shallow soil and depth to groundwater near southern parcel boundary	3, 6, 11; 45/55
MW-5	Within alley between building and ESCO building	Depth to groundwater east of building	B-8; 40/50
MW-6	Beneath 2500 building	Depth to groundwater central under building	B-9; 45/55

3.2 Field Methods

3.2.1 Soil Sampling Borings

Subsurface soil samples were collected during drilling of the Borings using a push probe, truck-mounted, drill rig (GeoProbe) with a hydraulically powered hammer/ram sampling device. The drill rig drove a 4-foot-long hollow steel rod into the ground for collection of soil samples.

The push probe sampler was advanced to a desired sampling depth and the drive point of the sampler was retracted. Once retracted, the push probe was advanced an additional 4 feet, thereby allowing soil to enter a 4-foot-long, 1.5-inch (inside diameter) acetate liner housed inside the casing of the sampler. After the sampler was retrieved from the boring, the soil liner was extruded from casing and the liner split using a razor knife. The samples were then placed in laboratory furnished containers and stored in iced coolers to await shipment. A geologic log was prepared describing the subsurface materials encountered, and other geologic or environmental observations.

All borings were abandoned with bentonite chips to within one foot below ground surface. All chips were hydrated for at least 1-hour prior to repair of the surface with asphalt or concrete as appropriate.

3.2.2 Monitor Well Installation

Groundwater monitor wells were drilled to about 10 feet below the estimated water table. The screen and blank well casing were constructed of two (2)-inch diameter Schedule 40, polyvinyl chloride ("PVC") flush coupled, threaded pipe. The screen was slotted at a nominal machine cut of 0.010-inch width. The filter pack consists of nominal clean graded Colorado silica #10-20 sand. Upon boring to total depth, the well casing, consisting of a threaded end cap on a 10-foot section of screen, in turn threaded fit to 10-foot sections of blank casing, were assembled and lowered to total depth. The filter pack was placed (by measuring with a weighted tape measure) into the annular space to approximately two-foot above the well screen. An aquifer seal of bentonite pellets was placed from the filter pack to about 0.5-feet depth. A surface seal of Portland Type II cement was placed from about 0.5-feet to the surface. A lockable, water tight well cover was installed on the well casing and a vault traffic box was cemented around the well at the surface.

During drilling, a geologic log was prepared describing the subsurface materials encountered as periodic grab samples from drill cuttings, depth to groundwater, and other geologic or environmental observations. Each groundwater monitoring well was installed according to Oregon Department of Water Resources regulations. The monitor well locations and elevations were surveyed accurate.

3.2.3 Soil Sampling Monitor Wells

Subsurface soil samples were collected during the drilling of the monitor wells according to method ASTM D1586-08a, "Standard Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils". The boreholes were advanced incrementally to permit intermittent sampling at approximate 5-foot intervals or sampling when potential contamination was visible.

After the borehole was advanced to the desired depth and excessive cuttings removed, a split-barrel sampler was attached to the sampling rods. The sampler and rods were driven with a 140-pound hammer and the number of blows were counted at each 0.5-foot increment up to three 0.5-foot increments. The sampler was opened and the soil was classified according to ASTM Method D2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)" and one or more representative samples were selected. The samples were then placed in laboratory furnished containers and stored in iced coolers to await shipment. A geologic log was prepared describing the subsurface materials encountered, and any other pertinent geologic or environmental observations.

3.2.4 Groundwater Sampling

Groundwater sampling in each monitor well was conducted using low-flow purging and sampling techniques. During low-flow sampling, a pump and dedicated polyethylene tubing were lowered into the well casing and positioned toward the middle of the well screen. The pump was then turned on and the pump rate set low enough to minimize drawdown of the water level within the well. The monitor wells were purged until groundwater quality parameters were stable.

During purging, water quality parameters including temperature, pH, and conductivity were periodically monitored until stabilization of the parameters was achieved.

Turbidity was visually monitored and recorded, and was also used as an indication of when the groundwater was stable for sampling. After stabilization was reached, a groundwater sample was collected following the low-flow technique described above. Groundwater samples were prepared according to protocol established by the analytical laboratory.

A chain of custody was prepared for all samples. Appropriate decontamination procedures were followed to prevent cross contamination of the drilling equipment between boreholes, and of groundwater samples between sample depths and between boring locations. Any investigation derived waste, soil and groundwater, was collected and disposed by the drilling subcontractor.

3.3 Chemical Analyses and Methods

Metals are the main chemicals of concern based on the operations of the facilities and the nearby Guilds Lake Remediation Project. Hazardous substances previously detected in the vicinity include PCBs, general petroleum, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples were analyzed for at least constituents detected in the vicinity.

All soil samples were analyzed for polynuclear aromatic hydrocarbons ("PAHs") by EPA Method 8270C/SIM, polychlorinated biphenyls ("PCBs") by EPA Method 8082, moisture, and total Resource Conservation and Recovery Act ("RCRA") metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. Selected soil samples were additionally analyzed for NorthWest Total Petroleum Hydrocarbons ("NWTPH") Hydrocarbon Identification ("HCID") or diesel.

All groundwater samples were analyzed for gasoline, diesel, volatile organics by EPA Method 8260B, PAHS, PCBs, pesticides by EPA Method 8081A, total Priority Pollutant Metals undissolved and dissolved: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, hexane extractable material ("HEM" – oil and grease), and total organic carbon ("TOC").

4 DATA RESULTS

Data quality objectives for the environmental assessment are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in shallow groundwater and soil above detection levels and at levels that pose an unacceptable risk to direct contact, soil and aquatic receptors. Data has been compared to DEQ's Screening Level Values ("SLVs") to determine whether these levels are exceeded and to support decision-making regarding the need for further investigation.

4.1 Soil Description

Borings B-7 and B-9 generally encountered light gray fill to a depth of approximately 1 foot, then brown clayey silt to total depths of 11.5 feet. Boring B-8 encountered brown fine sandy silt to about 20 feet depth, then well sorted sand. The silts and fine sand were damp. None of the material encountered in the borings had petroleum odors or indications of petroleum products. The Boring geologic logs are included in Appendix A.

Monitor well borings MW-4 through MW-6 encountered similar material to approximately 12 feet depth as in Borings B-7 through B-9 (see Geologic Logs, Appendix A). Monitor well MW-5 overdrilled B-8 and MW-6 overdrilled B-9. Below about 12 feet depth, the monitor well borings generally encountered silty, well sorted, brown fine sand. Below the silty sand, monitor well boring MW-4 encountered groundwater in a sandy pebbly gravel unit, approximately 3 feet in thickness. Screens of the monitor wells are installed within the saturated zone (see Appendix B). The soil cuttings from drilling were disposed at the Hillsboro Landfill (see Appendix C).

4.2 Groundwater Description

The groundwater gradient is essentially flat. However, based on water levels measured on February 20, 2009 during sampling, the groundwater flow direction is generally west-northwest, in the general downstream flow direction of the Willamette River (see Figure 5). The flow direction may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. Further investigation may be required to better define the groundwater flow directions and gradients. The following Table 2 lists the elevations and surveyed locations of the monitor wells, and groundwater static water levels measured on February 20, 2009.

Table 2 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-4	65.357	65.118	690469.698	7637709.180	55	45/55	2/20/09	48.69	16.428
MW-5	64.22	64.02	690697.319	7637695.231	50	40/50	2/20/09	47.71	16.31
MW-6	67.17	66.95	690566.067	7637672.419	55	45/55	2/20/09	50.58	16.37

Notes:

Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Well MW-4 installed November 1, 2008; MW-5 and MW-6 installed January 31, 2009.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008 and March 3, 2009.

4.3 Analytical Results

The following Table 3 summarizes analyzed constituents in soil and groundwater samples. Laboratory reports are included in Appendix D. Under the Joint Source Control Strategy ("JSCS"), DEQ is responsible for addressing upland sources that are impacting or may potentially impact the Willamette River in the Portland Harbor area. The detected concentrations are compared to Screening Level Values ("SLVs") from DEQ's JSCS Table 3-1, which are highlighted in orange in Table 3-1. Yellow shaded cells in Table 3 are detected concentrations that exceed the JSCS SLVs.

Lead exceeds SLVs in soil samples from Borings B-7 (3 feet) and B-9 (3 feet).

Two PAHs exceed SLVs in a soil sample from Boring B-7 (3 feet).

Tetrachloroethene was detected in groundwater samples from MW-4 and MW-6.

Table 3 – Sample Analyses Soil and Groundwater

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	**SOIL SAMPLE NUMBERS** MW4-S-3[3]	MW4-S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	**GROUNDWATER SAMPLES** MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg																
Antimony	64	410[a]													6	<5.6	<5.6	<5.6
Arsenic	7	1.7	<13	<14	<12	<13	<13	<13	<13	<13	<14	<12	<13	<14	0.045	<3.3	<3.3	<3.3
Beryllium	na	2000													na	<11	<11	<11
Barium	na	>100x 10^3	**170**	**190**	**130**	**250**	**180**	**150**	**270**	**170**	**150**	**180**	**260**	**180**	na			
Cadmium	1	510	<0.65	<0.68	<0.61	<0.63	<0.65	<0.67	<0.67	<0.68	<0.69	<0.59	<0.66	<0.68	0.094	<4.4	<4.4	<4.4
Chromium (total)	111	180	**23**	**20**	**13**	**24**	**23**	**25**	**26**	**18**	**22**	**18**	**25**	**18**	100	<11	<11	<11
Copper	149	38000													2.7	<11	<11	<11
Lead	17	800	**9.6**	**12**	<6.1	**61**	**12**	**10**	**14**	**15**	**12**	**67**	**17**	**12**	0.54	<1.1	<1.1	<1.1
Mercury	0.07	310	<0.32	<0.34	<0.3	<0.31	<0.32	<0.33	<0.33	<0.34	<0.35	<0.29	<0.33	<0.34	0.77	<0.5	<0.5	<0.5
Nickel	48.6	20000													16	<22	<22	<22
Selenium	2	5100	<13	<14	<12	<13	<13	<13	<13	<14	<14	<12	<13	<14	5	<5.6	<5.6	<5.6
Silver	5	5100	<0.65	<0.68	<0.61	<0.63	<0.65	<0.67	<0.67	<0.68	<0.69	<0.59	<0.66	<0.68	0.12	<11	<11	<11
Thallium	na	82[a]													na	<5.6	<5.6	<5.6
Zinc	459	310[a]													36	<28	<28	<28
METALS-DISSOLVED (EPA 200.8/7470A)	na																	
Antimony															6	<5	<5	<5
Arsenic															0.045	<3	<3	<3
Beryllium															na	<10	<10	<10
Barium															na			
Cadmium															0.094	<4	<4	<4

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
Chromium (total)															100	<10	<10	<10
Copper															2.7	<10	<10	<10
Lead															0.54	<1	<1	<1
Mercury															0.77	<0.5	<0.5	<0.5
Nickel															16	<20	<20	<20
Selenium															5	<5	<5	<5
Silver															0.12	<10	<10	<10
Thallium															na	<5	<5	<5
Zinc															36	<50	<50	<50
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg																
Aroclor 1016	530	21000[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.96	<0.047	<0.047	<0.047
Aroclor 1221		620[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1232		620[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1242		740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1248	1500	740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1254	300	740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.033	<0.047	<0.047	<0.047
Aroclor 1260	200	740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1262			<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	na	<0.047	<0.047	<0.047
Aroclor 1268			<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	na	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg																	
alpha-BHC															0.0049	<0.0047	<0.0047	<0.047
beta-BHC															0.017	<0.0047	<0.0047	<0.047
delta-BHC															0.037	<0.0047	<0.0047	<0.047

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4- S-11	B7- S-03	B7- S-06	B7- S-09	B-8- 4	B-8- 8	B-8- 12	B9- S-03	B9- S-06	B9- S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
gamma-BHC (Lindane)	4.99														0.052	<0.004 7	<0.0047	<0.047
Heptachlor	10														0.000079	<0.0047	<0.0047	<0.047
Aldrin	40														0.00005	<0.0047	<0.0047	<0.047
Heptachlor Expoxide	16														0.000039	<0.0047	<0.0047	<0.047
gamma-Chlordane	0.37														0.00081	<0.0047	<0.0047	<0.047
alpha-Chlordane	0.37														0.00081	<0.0047	<0.0047	<0.047
4,4'-DDE	0.33														0.00022	<0.0047	<0.0047	<0.047
4,4'-DDD	0.33														0.00031	<0.0047	<0.0047	<0.047
4,4'-DDT	0.33														0.00022	<0.0047	<0.0047	<0.047
Dieldrin	0.0081														0.000054	<0.0047	<0.0047	<0.047
Endosulfan I															0.051	<0.0047	<0.0047	<0.047
Endosulfan II															0.051	<0.0047	<0.0047	<0.047
Endrin	207														0.036	<0.0047	<0.0047	<0.047
Endrin Aldehyde															na	<0.0047	<0.0047	<0.047
Methoxychlor															0.03	<0.0094	<0.0094	<0.0094
Endosulfan Sulfate															89	<0.0047	<0.0047	<0.047
Endrin Ketone															na	<0.019	<0.019	<0.019
Toxaphene															0.0002	<0.047	<0.047	<0.047
VOLATILE ORGANIC CHEMICALS (EPA 8260B)	ug/kg																	
1,1,1,2-Tetrachloroethane															2.5	<0.2	<0.2	<0.2
1,1,1-Trichloroethane															11	<0.2	<0.2	<0.2

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4- S-11	B7- S-03	B7- S-06	B7- S-09	B-8- 4	B-8- 8	B-8- 12	B9- S-03	B9- S-06	B9- S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
1,1,2,2-Tetrachoroethane															0.33	<0.2	<0.2	<0.2
1,1,2-Trichoroethane															1.2	<0.2	<0.2	<0.2
1,1-Dichloroethane															47	<0.2	<0.2	<0.2
1,1-Dichloroethene															na	<0.2	<0.2	<0.2
1,1-Dichloropropene															na	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene															na	<0.2	<0.2	<0.2
1,2,3-Trichloropropane															0.0095	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	9200														8.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene															na	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane															na	<1	<1	<1
1,2-Dibromoethane															0.033	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	1700														49	<0.2	<0.2	<0.2
1,2-Dichloroethane															0.73	<0.2	<0.2	<0.2
1,2-Dichloropropane	300														0.97	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene															na	<0.2	<0.2	<0.2
1,3-Dichlorobenzene															14	<0.2	<0.2	<0.2
1,3-Dichloropropane															na	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	300														2.8	<0.2	<0.2	<0.2
2,2-Dichloropropane															na	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)															7100	<5	<5	<5

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
2-Chloroethyl Vinyl Ether															na	<1	<1	<1
2-Chlorotoluene															na	<0.2	<0.2	<0.2
2-Hexanone															99	<2	<2	<2
4-Chlorotoluene															na	<0.2	<0.2	<0.2
Acetone															1500	<5	<5	<5
Benzene															1.2	<0.2	<0.2	<0.2
Bromobenzene															na	<0.2	<0.2	<0.2
Bromochloromet hane															na	<0.2	<0.2	<0.2
Bromodichlorom ethane															1.1	<0.2	<0.2	<0.2
Bromoform															8.5	<1	<1	<1
Bromomethane															8.7	<0.2	<0.2	<0.2
Carbon Disulfide															0.92	<0.2	<0.2	<0.2
Carbon Tetrachloride															0.51	<0.2	<0.2	<0.2
Chlorethane															23	<1	<1	<1
Chlorobenzene															50	<0.2	<0.2	<0.2
Chloroform															0.17	<0.2	<0.2	<0.2
Chloromethane															2.1	<1	<1	<1
cis-1,2-Dichloroethylene															61	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene															0.055	<0.2	<0.2	<0.2
Dibromochlorom ethane															na	<0.2	<0.2	<0.2
Dibromomethane															61	<0.2	<0.2	<0.2
Dichlorodifluoro methane															390	<0.2	<0.2	<0.2
Ethylbenzene															7.3	<0.2	<0.2	<0.2
Hexachlorobenze ne	19														0.00029			

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4- S-11	B7- S-03	B7- S-06	B7- S-09	B-8- 4	B-8- 8	B-8- 12	B9- S-03	B9- S-06	B9- S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
Hexachlorobutadiene	600														0.86	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)															na	<1	<1	<1
Isopropylbenzene															660	<0.2	<0.2	<0.2
m,p-Xylene															1.8	<0.4	<0.4	<0.4
Methylene Chloride															8.9	<1	<1	<1
Methyt-Butyl Ether															37	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone															na	<0.2	<0.2	<0.2
Naphthalene															0.2	<1	<1	<1
n-Butylbenzene															na	<0.2	<0.2	<0.2
n-Propylbenzene															na	<0.2	<0.2	<0.2
o-Xylene															13	<0.2	<0.2	<0.2
p-Isopropyltoluene															na	<0.2	<0.2	<0.2
sec-Butylbenzene															na	<0.2	<0.2	<0.2
Styrene															100	<0.2	<0.2	<0.2
tert-Butylbenzene															na	<0.2	<0.2	<0.2
Tetrachloroethene	500														0.12	**0.3**	<0.2	**0.21**
Toluene															9.8	<1	<1	<1
trans-1,2-Dichloroethene															110	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene															0.055	<0.2	<0.2	<0.2
Trichloroethene	2100														0.17	<0.2	<0.2	<0.2
Trichlorofluoromethane															1300	<0.2	<0.2	<0.2
Vinyl Acetate															16	<2	<2	<2
Vinyl Chloride															0.015	<0.2	<0.2	<0.2

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg																
Naphthalene	561	22000	<8.7	<9.1	<8.1	**31**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
2-Methylnaphthalene	200		<8.7	<9.1	<8.1	**15**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
1-Methylnaphthalene	na		<8.7	<9.1	<8.1	**10**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	na	<0.095	<0.095	<0.094
Acenaphthylene	200		<8.7	<9.1	<8.1	**130**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Acenpththene	300	41x10^{6}	<8.7	<9.1	<8.1	<8.3	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Fluorene	536	35x10^{6}	<8.7	<9.1	<8.1	**16**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Phenanthrene	1170		<8.7	<9.1	<8.1	**260**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Anthracene	845		<8.7	<9.1	<8.1	**120**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Fluoranthene	2230	29x10^{6}	<8.7	<9.1	<8.1	**550**	<8.7	<8.9	<8.9	<9	<9.3	**10**	<8.8	<9	0.2	<0.095	<0.095	<0.094
Pyrene	1520	21x10^{6}	<8.7	<9.1	<8.1	**530**	<8.7	<8.9	<8.9	<9	<9.3	**12**	<8.8	<9	0.2	<0.095	<0.095	<0.094
Benzo(a)anthracene	1050	2700	<8.7	<9.1	<8.1	**270**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.18	<0.0095	<0.0095	<0.0094
Chrysene	1290	270000	<8.7	<9.1	<8.1	**480**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.18	<0.0095	<0.0095	<0.0094
Benzo(b)fluoranthene		2700	<8.7	<9.1	<8.1	**1400**	<8.7	<8.9	<8.9	<9	<9.3	**9.1**	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Benzo(k)fluoranthene	13000	27000	<8.7	<9.1	<8.1	**640**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Benzo(a)pyrene	1450	270	<8.7	<9.1	<8.1	**640**	<8.7	<8.9	<8.9	<9	<9.3	**8.1**	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Ideno(1,2,3-c,d)pyrene	100	2700	<8.7	<9.1	<8.1	**1600**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Dibenz(a,h)anthracene	1300	270	<8.7	<9.1	<8.1	**620**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Benzo(g,h,i)perylene	300		<8.7	<9.1	<8.1	**2500**	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.0095	<0.0095	<0.0094

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4- S-11	B7- S-03	B7- S-06	B7- S-09	B-8- 4	B-8- 8	B-8- 12	B9- S-03	B9- S-06	B9- S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
PETROLEUM HYDROCARBONS	ug/kg																	
Diesel Range (NWTPH-Dx)						<31x 10^3										<250	<250	<250
Lube Oil Range (NWTPH-Dx)						<63 x10^3										<400	<400	<400
Gasoline (NWTPH-HCID)	22x10^6					<25 x10^3						<24 x10^3						
Diesel Fuel (NWTPH-HCID)	70x10^6					<63 x10^3						<59 x10^3						
Lube Oil (NWTPH-HCID)						<130 x10^3						<120 x10^3						
TPH-Gas (NWTPH-Gx)																<100	<100	<100
Oil & Grease (EPA 1664)																<5200	<5200	<5200

Notes:

[1] *Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.*

[2] *DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by ([a])*

[3] *Soil sample from boring for monitoring well; example MW4-S-3 is soil sample from MW4 boring taken from 3 feet depth below ground surface.*

[4]*Screening Level Values (SLVs) for water from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted yellow on the table.*

[5]*Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.*

Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value.

***Bolded** values are concentrations detected above the respective PQL.*

Grey shaded cells are PQLs greater than JSCS SLV.

Yellow shaded cells are detected concentrations that exceed JSCS screening level values.

Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

5 FINDINGS AND CONCLUSIONS

The investigation was intended to carry out an upland source control evaluation on a voluntary basis and to evaluate occupational worker exposure to soil. Data collected were tabulated and compared to DEQ's JSCS SLVs (DEQ, Joint Source Control Strategy, Table 3-1). Data were also compared to DEQ's Risk Based Concentrations (RBCs) for occupational exposure to soil. No beneficial use has been identified for onsite groundwater; therefore, a comparison to human health criteria for groundwater was not made. On Table 3-1, DEQ has identified SLVs that are preferred for use in screening soil, catch basin sediment, storm water and groundwater for initial upland source control evaluations. The DEQ identified SLVs are a combination of federal minimum contaminant levels (MCLs) appropriately used for drinking water supplies, EPA tap water preliminary remediation goals (PRGs) used for evaluating the residential drinking water pathway, various ambient water quality criteria for ecological receptors, and ecological-based sediment quality and bioaccumulative criteria. As such, these DEQ-preferred screening SLVs are very conservative and not necessarily applicable to each site and its specific conditions. The screening levels are simply a means of evaluating the possible threat to the surface water environment and associated receptors, should the soil and groundwater actually migrate into the site storm water system and be distributed into a surface water body, or for groundwater to migrate and discharge into a surface water body at concentrations that exceed the SLVs. Screening using the SLVs does not account for attenuation, degradation or any other controls that may exist, such as, foundation slabs or area paving.

Some chemicals were not detected in soil or water but their PQLs exceed their SLVs. For metals in soil, arsenic, mercury and selenium were not detected but at PQLs that were 2 to 8 times their SLVs. Chlordane, aldrin, heptachlor epoxide, DDD/DDE/DDT and dieldren have been identified as bioaccumulative chemicals, and their PQLs were 1 to 3 orders of magnitude higher than their SLVs. Achieving lower PQLs would significantly increase the cost of analysis. Pesticides are not identified as chemicals known to be used on site.

Concentrations of barium and chromium (total) were detected in soil but barium does not have a JSCS SLV and chromium concentrations were below its SLV. Only lead was detected in soil at concentrations that exceed its SLV, at 3 feet depth in Borings B-7 and B-9. Some PAHs were detected in soil at concentrations that exceed their SLVs, at 3 feet depth in boring B7. These sample locations are beneath the existing building floor slab and are therefore not accessible to erosion or runoff into the site storm drain system. Arsenic, mercury and selenium PQLs were slightly higher to 3 times higher than their SLVs in most soil samples.

Metals were not detected in groundwater at concentrations that exceed their SLVs although many of the metals PQLs were slightly to significantly higher than their SLVs. Arsenic and cadmium PQLs were 3 orders of magnitude higher than their SLVs but none of these metals, except for lead, and to a lesser degree chromium, were detected at elevated concentrations in onsite soil. Tetrachlorethene ("PCE") was detected in wells MW-4 and MW-6 at about 2 times its SLV. The PCE SLV is a risk-based criterion for drinking water; drinking water may not be a reasonably likely current or future beneficial use for the site although drinking water is applied to surface water at the Portland Harbor site. Ecological risk values shown on Table 3-1, although not identified by DEQ as preferred for initial screening of upland sites, are 98 and 840 ug/l. For the hypothetical scenario that site groundwater migrates to and discharges into a surface water body, and in the absence of a drinking water beneficial use, the detected 0.3 and 0.21 ug/l PCE detected in the wells are significantly lower than the other Table 3-1 screening values for ecological receptors. Additionally, if groundwater from beneath the site may potentially discharge to the Willamette River, the very low concentrations of PCE present will be subject to attenuation and degradation processes along the groundwater flow pathway.

Many chemical PQLs were slightly to significantly higher than their groundwater SLVs. PCB Aroclor PQLs were only slightly higher than their SLVs and no PCBs were detected in soil or in groundwater samples above their PQLs. Some pesticide PQLs were 1 to 2 orders of magnitude higher than their SLVs but again pesticides are not identified as chemicals known to be used on site. In addition, if chemicals are hypothetically present in groundwater at very low concentrations, where they were not detected and their PQLs exceed the SLVs, they would be subjected to attenuation and degradation processes along their migration pathway assuming groundwater from beneath the site does in fact discharge to surface water.

Metals is soil did not exceed their RBCs for occupational exposure, except for arsenic which was not detected at concentrations of 10 times its RBCs. Aroclors were not detected at concentrations that exceed their RBCs. PAHs were not detected at concentrations that exceed their RBCs except for benzo(a)pyrene at 640 μg/kg, and dibenz(a,h)anthracene at 620 μg/kg.

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at elevated concentrations in site soil or groundwater. Only lead and and some PAHs in soil, and PCE in groundwater, are present at concentrations that exceed their SLVs and RBCs in a limited area mostly beneath the existing building floor slab.

6 RECOMMENDATIONS

It is recommended that one or two rounds of groundwater sampling be performed to confirm the low detections that have been obtained and to verify the groundwater flow direction(s) within a low gradient regime.

Certain analyses of groundwater should be performed at lower detection limits to affirm the conclusions addressed in this report.

7 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk. Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of previous work. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing.

Richard C. Kent, R.G.

GeoPro Geologic Services LLC

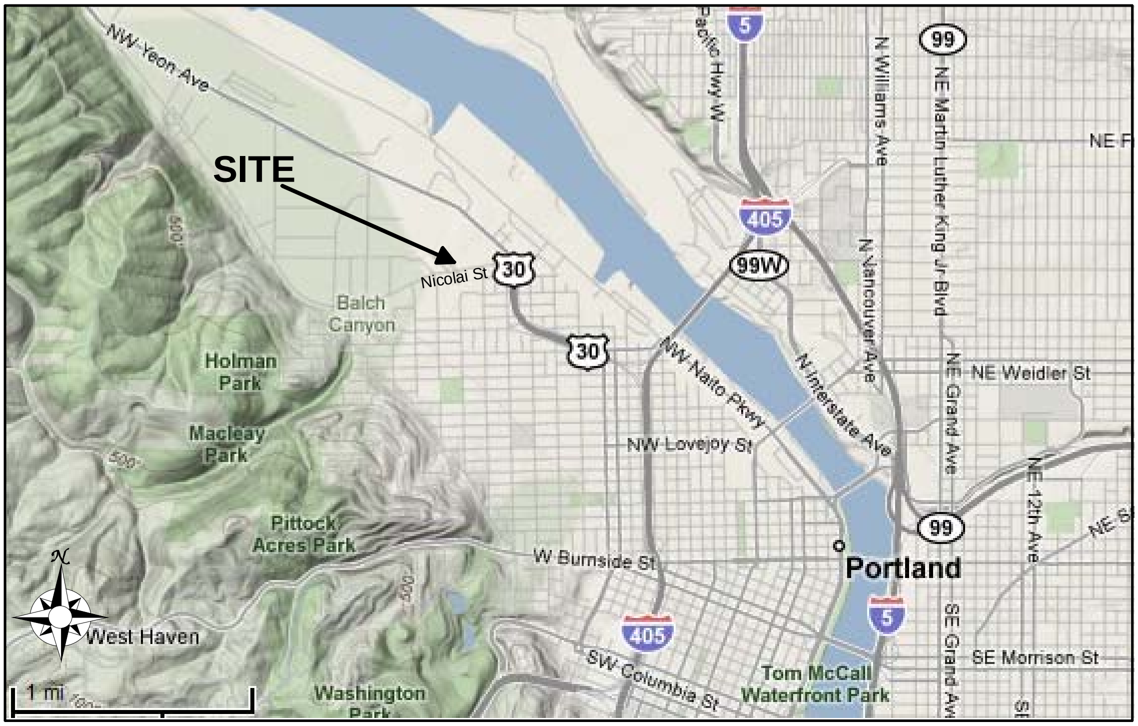
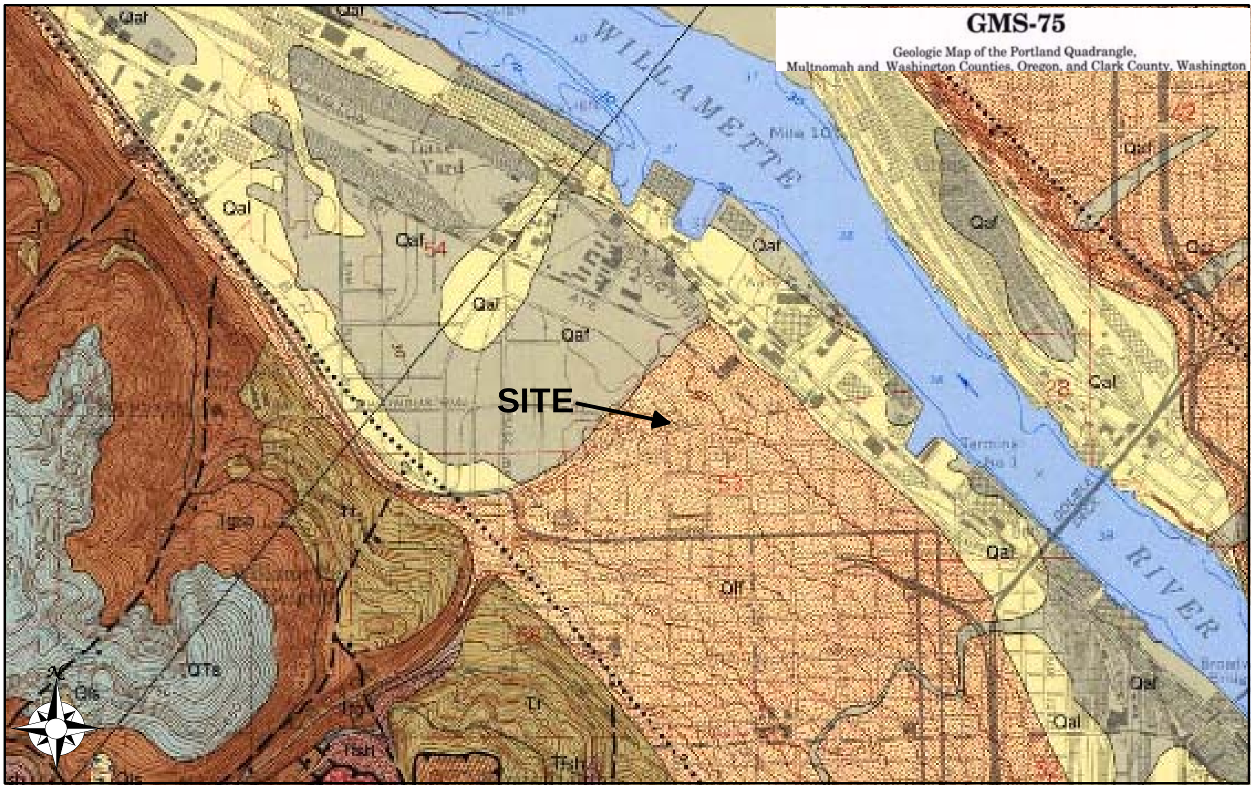


Figure 1 – Location Map, Portland, Oregon



Legend

Qaf — **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal — **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff — **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 2 – Geology Map, Northwest Portland, Oregon

Figure 3 – Adjacent Properties, NW Nicolai St., Portland, Oregon

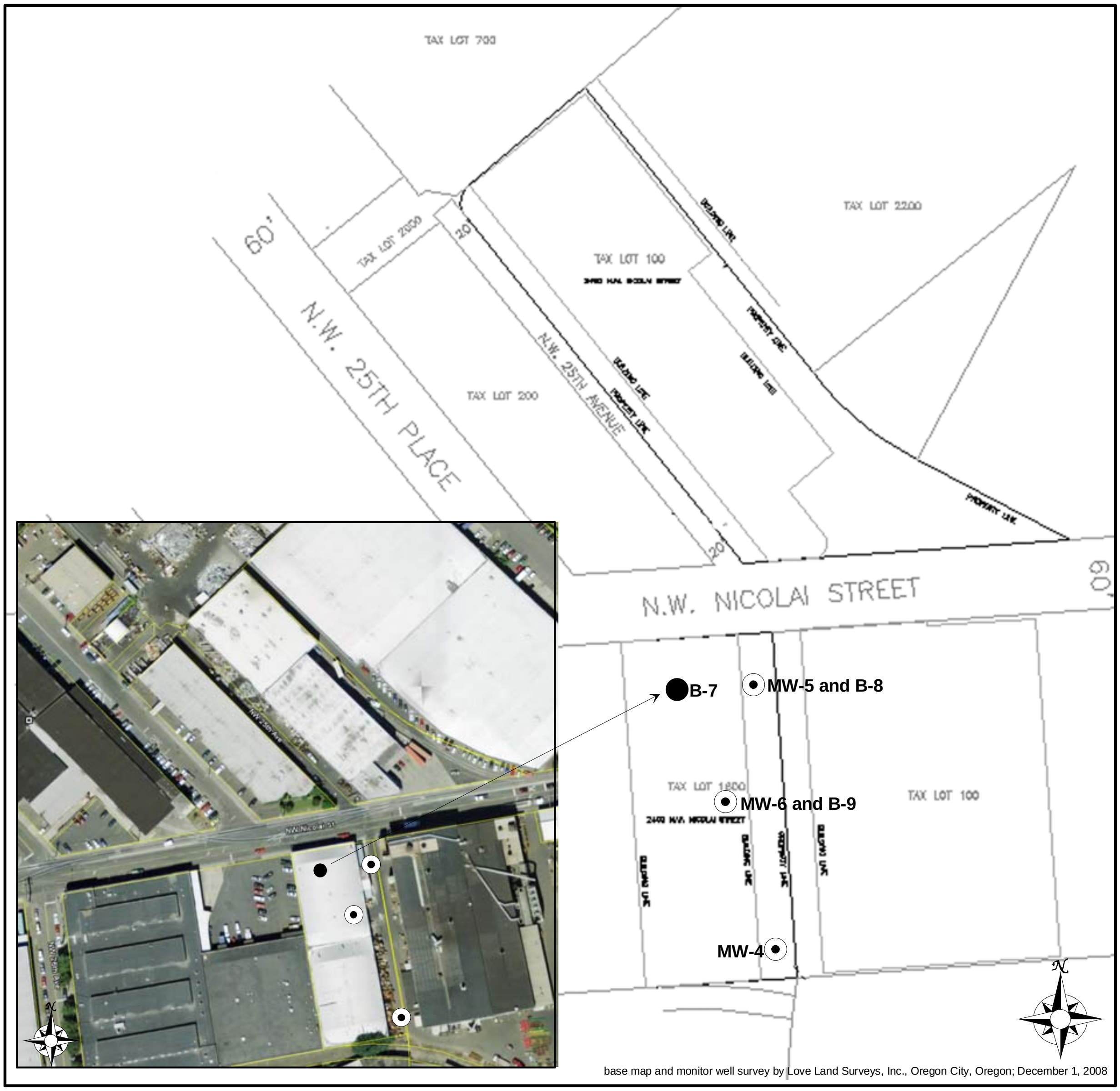


Figure 4 – Drilling Locations

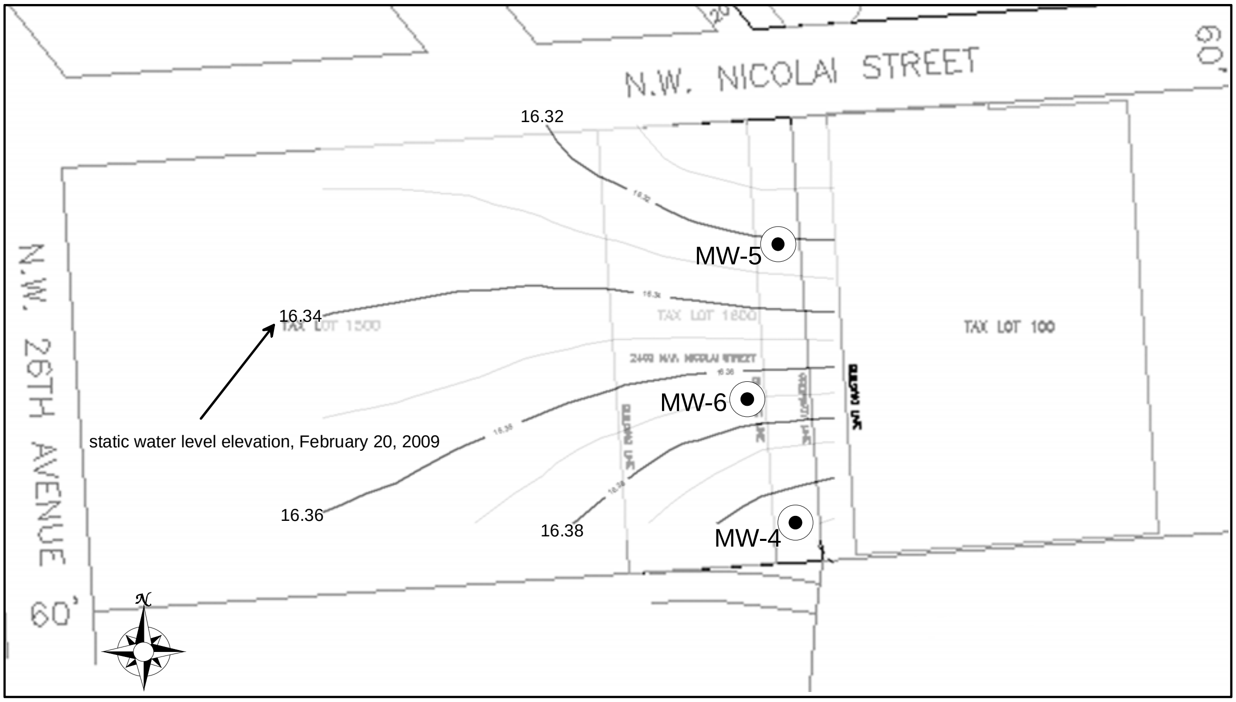


Figure 5 – Groundwater Flow Direction, February 20, 2009

8 APPENDICES

Appendix A – Geologic Logs: Borings and Monitor Wells

Appendix B – Monitor Well As-Built Sketches

Appendix C – Disposal Ticket, Soil Cuttings, Hillsboro Landfill

Appendix D – Laboratory Analyses

APPENDIX A

GEOLOGIC LOG

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: B-7**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
11/1/08 1410	11/1/08 1428		11.5 ft	asphalt (interior)	Water 0
Depth 1st Water Date/Time:	**Geophys. Logs:**	**Sec-Tws-Rng**	**Laboratory:**	**C-O-C Number:**	Soil 3
na	na		Onsite, Redmond		

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill				red brick ~1.5 ft
2										
3	3 3.5				ML	clayey silt		mod brown	damp	
4			1415	none						
5										
6	6 6.5									
7										
8			1420	none						
9	9 9.5									
10										
11										TD 11.5 ft
12			1426	none						
13										
14										
15										
16										
17										
18										
19										
20										

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encounteed described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
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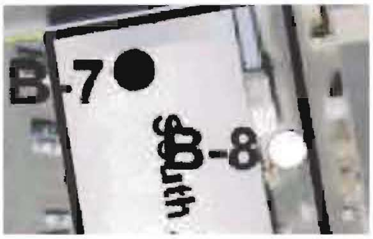
GEOLOGIC LOG

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: B-8**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/30/08 1000	10/30/08 1140		34 ft	asphalt	Water 0
Depth 1st Water Date/Time: none	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 4

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill ---------------		lt gray ------------	--------------	
2									damp	
3			1004	none						
4	4 4.5		4		ML	v fn sandy		mod		
5						silt		brown 5Y 4/4		
6										
7			1008	none						
8	8		8							
9	8.5									
10					10.5 ---------	slightly silty		mod yel brn		
11				none	CL-------	clay		10YR5/4		
12	12		1017		11					
13	12.5		12							
14				none						
15			1023							
16	16 16.5		16		ML	v fn sandy silt		mod brown		
17								5Y 4/4		
18				none						
19	19		1034							
20	19.5		20			inc fn sand				

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encounteed described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

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Battle Ground, WA 98604
(360) 666-1465

GEOLOGIC LOG

SHEET 2 of 2

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** **B-8**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
21					SW	well sorted		mod	damp	
22				none		fn sand		brown		
23			1044					5Y4/4		
24			24							
25										
26				none						
27			1055							
28			28							
29										
30				none						
31										v slightly
32			1114			inc darker				micaceous
33			32 1140	none		mineral grains				
34			34							TD 34 ft
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										

GEOLOGIC LOG

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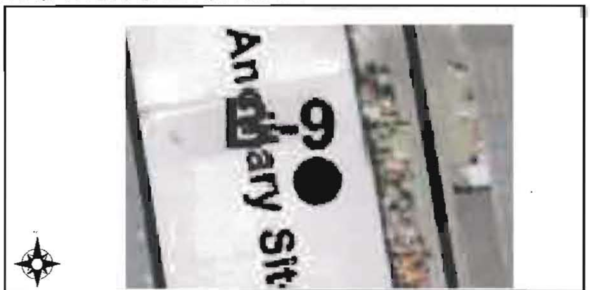
LOCATION SKETCH MAP:



Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: B-9**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): Core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
11/1/08 1340	11/1/08 1400		11.5 ft	asphalt (interior)	Water 0
Depth 1st Water Date/Time:	**Geophys. Logs:**	**Sec-Tws-Rng**	**Laboratory:**	**C-O-C Number:**	Soil 3
na	na		Onsite, Redmond		

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill		lt gray		
2										
3	3 3.5			none	ML	clayey silt		mod yel brown 10YR5/4	damp	
4										
5										
6	6 6.5			none						
7										
8										
9	9 9.5			none						
10										
11										TD 11.5 ft
12										
13										
14										
15										
16										
17										
18										
19										
20										

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encounteed described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

GEOLOGIC LOG

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LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2500 NW Nicolai St, Portland	**Drill Hole No.: MW-4**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Mobile air rotary/Geoprobe to 12'	Sampling Method(s): Core tube/grab

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/31/08 1422; 11/1 1540	11/1/08 1722		50 ft	asphalt-cement	Water 0
Depth 1st Water Date/Time: 11/1/08 ~43 ft 1700	Geophys. Logs: na	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 3

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
						fill		lt gray red brick	dry	Well Tag L88330
1										
2										
3	3 3.5			none		----------------		------------	---------------	
4					CL	silty clay		mottled gray-org/ brn	damp	
5										
6	6 6.5			none						
7										
8										
9					----------	----------------				
10										0-11.5 ft Geoprobe; overdrill with air rotary
11	11 11.5			none	SM	silty, well graded sand				
12										
13										
14										
15			1627							
16										
17										
18										
19										
20										

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encounteed described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

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GEOLOGIC LOG

Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.:** **MW-4**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
21					----------	----------------		------------		
22					SW-SC	silty well sorted fn sand		mod brn	damp	
23										
24										
25	------------		1630	none						
26										
27										
28										
29								inc darker grains		
30	------------		1632	none		inc clay content				
31										
32									slight inc moisture	
33										
34									----------------	
35	------------		1634	none						
36										
37										
38						inc sand grain size			moist	
39										
40	------------		1642	none						
41										
42									wet	
43					----------	----------------			---------------	~44 ft
44					GP-GM	silty poorly sorted gravel			saturated	
45			1703	none						

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GEOLOGIC LOG

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: MW-4**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
			1710	none	----------	----------------		mod	----------------	gravel ends
46								brown	wet	~45.4 ft
47					SM-SC	clayey, well sorted sand				
48										
49									moist	
50			1717	none						
51										
52										
53										
54			1722	none						TD 55 ft
55										
56										
57										
58										
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										

GEOLOGIC LOG

GeoPro Geologic Services LLC
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(360) 666-1465

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
081209 Shaker Square LLC	Shaker Square LLC
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: MW-5**
Drilling Co./Foreman: Env West/Tim	Geologist: rck
Drilling Method/C57/Rig: Lil' Brutus Air Rotary	Sampling Method(s): grab

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
1/31/09 0750	1/31/09 0930		51.25 ft	asphalt	Water 0
Depth 1st Water Date/Time: ~48 ft/0855	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 0

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
			0750			fill		lt gray		SEE B-8 SOIL SAMPLES
1						---------------		------------	--------------	
2									damp	
3				none						
4					ML	v fn sandy silt		mod brown 5Y 4/4		
5	G1		0800							
6										
7				none						
8										
9										
10	G2		0813		10.5 --------- CL------- 11	slightly silty clay		mod yel brn 10YR5/4		
11				none						
12										
13										
14				none						
15	G3		0820							
16					ML	v fn sandy silt		mod brown 5Y 4/4		
17										
18				none						
19										
20	G4		0824			inc fn sand				

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GEOLOGIC LOG

Project No./Name: 081209 Shaker Square LLC	CLIENT: Shaker Square LLC
Project Location: 2500 NW Nicolai St, Portland	**Drill Hole No.:** **MW-5**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
21					SW	well sorted fn sand		mod brown 5Y4/4	damp	
22				none						
23										
24										
25	G5		0826							
26				none						
27										
28										
29										
30	G6		0832	none						
31										v slightly micaceous
32						inc darker mineral grains				
33				none						
34										
35	G7		0837							
36										
37										
38										
39										
40	G8		0840							
41										
42										
43										
44										
45	G9									

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GEOLOGIC LOG

Project No./Name:	CLIENT:
081209 Shaker Square LLC	Shaker Square LLC
Project Location: 2500 NW Nicolai St, Portland	**Drill Hole No.: MW-5**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
46						well sorted fn sand		med brn	damp	
47										
48									--------------- wet	~48 ft no gravel
49										
50	G10		0855							
51										TD 52 ft
52			0904							(measured 51'3")
53										
54										
55										
56										
57										
58										
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										

GEOLOGIC LOG

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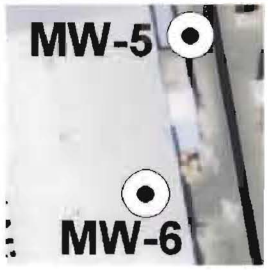
Battle Ground, WA 98604
(360) 666-1465

LOCATION SKETCH MAP:



Project No./Name: 081209 Shaker Square LLC	CLIENT: Shaker Square LLC
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: MW-6**
Drilling Co./Foreman: Env West/Tim	Geologist: rck
Drilling Method/C57/Rig: Lil' Brutus Air Rotary	Sampling Method(s): grab

Drilling Start Date/Time: 1/31/09 1240	Drilling End Date/Time: 1/31/09 1730	Elevation:	Total Depth: 60 ft backfill to 55 ft	Surface Conditions: concrete 7"	Samples: Water 0
Depth 1st Water Date/Time: ~50 ft/1447	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 0

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
						fill		lt gray		SEE B-9 SOIL SAMPLES
1						----------------		-------------		
2										
3					ML	clayey silt		mod yel brown 10YR5/4	damp	
4										
5	G1		1247							
6										
7										
8										
9						fn sandy silt				
10	G2		1251							
11										
12										
13										
14										
15	G3		1256							
16										
17										
18								med brn		
19						dec silt				
20	G4		1300							

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GEOLOGIC LOG

Project No./Name:	CLIENT:
081209 Shaker Square LLC	Shaker Square LLC
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.:** MW-6

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
21										
22										
23										
24										
25	G5		1303	none	SW	fn sand sell sorted slightly silty		med brn	damp	
26										
27										
28										
29										
30	G6		1307							1430 re-enter hole after casing broke
31										
32										
33										
34										
35	G7		1435							
36										
37										
38										
39										
40	G8		1437							
41										
42										
43										
44										
45	G9		1440							

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(360) 666-1465

GEOLOGIC LOG

Project No./Name:	CLIENT:
081209 Shaker Square LLC	Shaker Square LLC
Project Location: 2500 NW Nicolai St., Portland	**Drill Hole No.: MW-6**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
46										
47									inc moisture	
48										
49										
50	G10		1445		SW	fn sand well sorted		med brn	---------------	SWL 52ft
51						slightly silty			wet	
52										
53										
54										
55	G11		1545							
56										
57										
58										
59										TD 60 ft
60	G12		1614							
61										SWL 50.1 ft backfill w/
62										4 ft bentonite &
63										1 ft sand to 56 ft sand heave
64										severe: hole filled with water
65										to prevent heave during
66										monitor casing installation
67										
68										
69										
70										

APPENDIX B

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

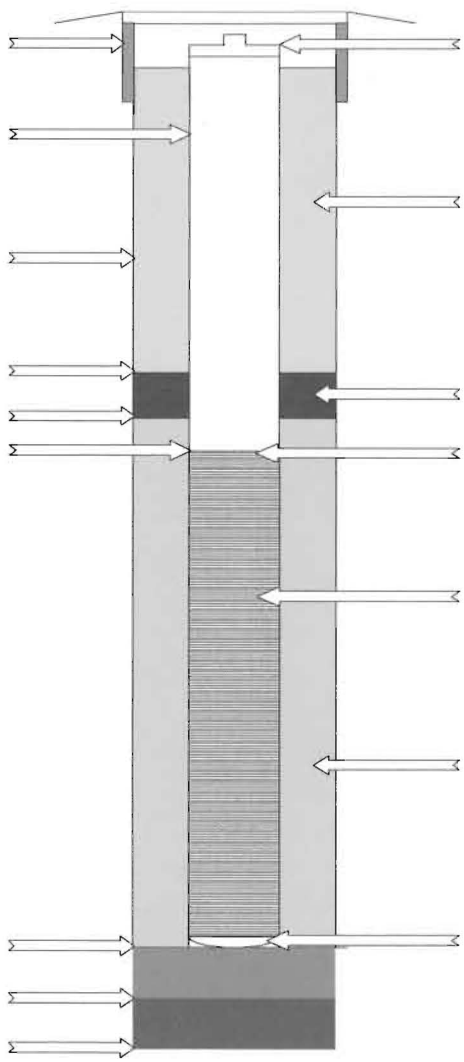
AS-BUILT WELL INSTALLATION SKETCH

SHEET 1 of 1

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Install Date/Time: Start: 10/31/08 1245 End: 10/31/08 1430	Well No.: MW-4 (L88328) Project Location: 2945 NW Nicolai, Portland, OR

First Groundwater Encounter During Drilling Was:	Date: 10/31/08 Time: 1250 Depth: ~45 ft	Elevation:	Total Drilled Depth:	Drilling Co./Foreman:	Type of Well:
			55 ft	Env West/Randy	Monitor
Development Method:	Geologist:	Sec-Tws-Rng	Padlock No.:	Drill Rig Type:	Install SWL:
bail/pump	rck			air rotary	44.33 ft



☒ 'Christy'-type traffic and security surface box
or ☐ Above Ground Casing

Blank casing ID 2 - inches

Boring OD 6 - inches

Optional seal depth to top na feet

Filter pack depth to top 38.3 feet

Screen depth to top 39.5 feet

Depth bottom of casing 49.5 feet

Overdrill sand backfill bottom 5 feet

Overdrill bentonite backfill bottom na feet

Water-tight well plug with padlock

Surface annular seal
☒ Bentonite or
☐ Type I-II cement

Bentonite seal (optional)

Flush threaded O-ring coupling

Schedule 40 PVC screen
slot size 0.010 inches

Granular filter pack kiln dried
Colorado silica sand, #10-20

Bottom flush threaded cap
☒ pointed tip T-200 or
☐ round cap

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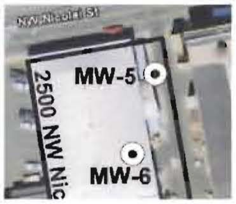
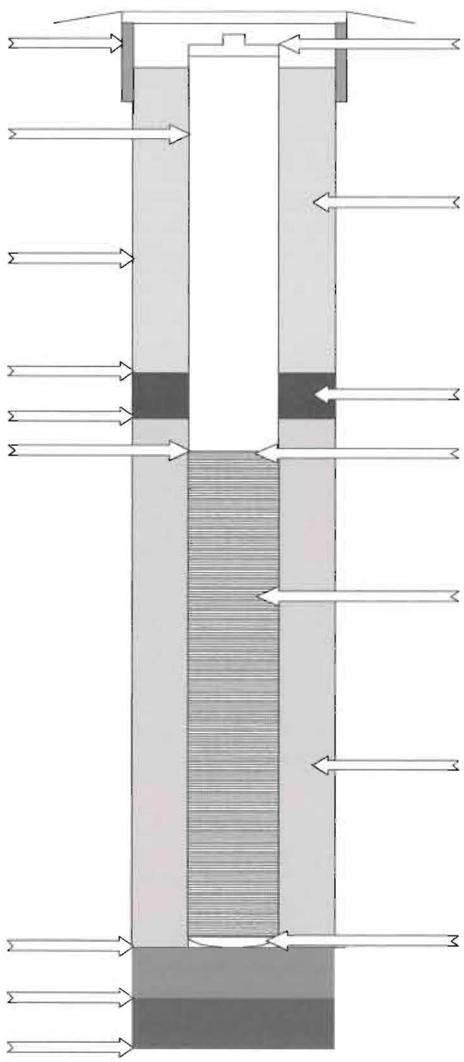
AS-BUILT WELL INSTALLATION SKETCH

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
081209 Shaker Square LLC	Shaker Square LLC
Install Date/Time:	**Well No.:** **MW-5 (L68998)**
Start: 1/31/09 0936	Project Location:
End: 1/31/09 1035	2500 NW Nicolai, Portland, OR

First Groundwater Encounter During Drilling Was:	Date: 1/31/09 Time: 0853 Depth: ~48 ft	Elevation:	Total Drilled Depth:	Drilling Co./Foreman:	Type of Well:
			51.25 ft	Env West/Tim	Monitor
Development Method:	Geologist:	Sec-Tws-Rng	Padlock No.:	Drill Rig Type:	Install SWL:
pump	rck	overdrill B-8		air rotary	43.4 ft



☒ 'Christy'-type traffic and security surface box
or ☐ Above Ground Casing

Blank casing ID 2 - inches

Boring OD 6 - inches

Optional seal depth to top na feet

Filter pack depth to top 37.0 feet

Screen depth to top 40.0 feet

Depth bottom of casing 50.0 feet

Overdrill sand backfill bottom 51.25 feet

Overdrill bentonite backfill bottom 0 feet

Water-tight well plug with padlock

Surface annular seal
☒ Bentonite or
☐ Type I-II cement

Bentonite seal (optional)

Flush threaded O-ring coupling

Schedule 40 PVC screen slot size 0.010 inches

Granular filter pack kiln dried Colorado silica sand, #10-20

Bottom flush threaded cap
☐ pointed tip T-200 or
☒ round cap

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Battle Ground, WA 98604
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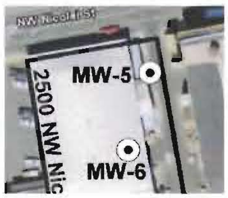
AS-BUILT WELL INSTALLATION SKETCH

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
081209 Shaker Square LLC	Shaker Square LLC
Install Date/Time: Start: 1/31/09 1730 End: 1/31/09 1915	**Well No.:** **MW-6 (L68999)** Project Location: 2500 NW Nicolai, Portland, OR

First Groundwater Encounter During Drilling Was:	Date: 1/31/09 Time: 1447 Depth: ~50 ft	Elevation:	Total Drilled Depth:	Drilling Co./Foreman:	Type of Well:
			60 ft backfill to 55	Env West/Tim	Monitor
Development Method:	Geologist:	Sec-Tws-Rng	Padlock No.:	Drill Rig Type:	Install SWL:
pump	rck		master	air rotary	~50 ft

☒ 'Christy'-type traffic and security surface box
or ☐ Above Ground Casing

Blank casing ID 2 - inches

Boring OD 6 - inches

Optional seal depth to top na feet

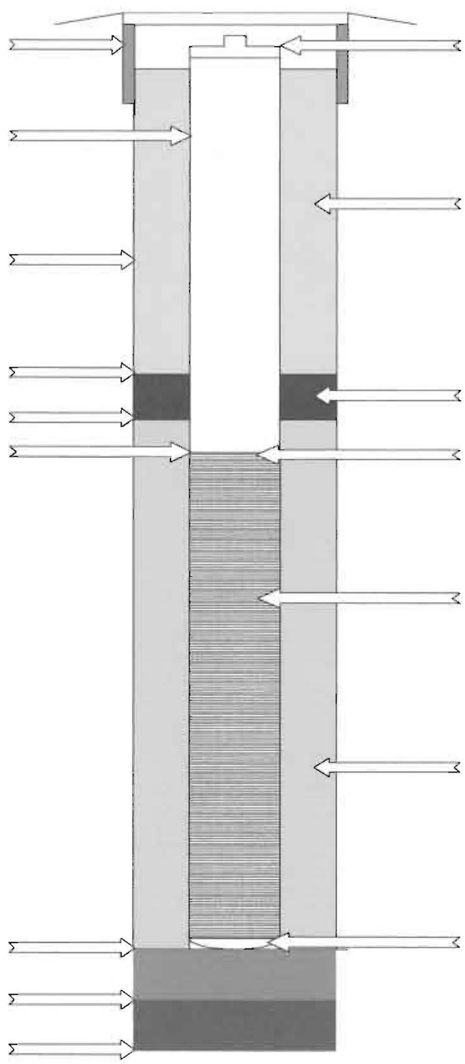
Filter pack depth to top 42 feet

Screen depth to top 45 feet

Depth bottom of casing 55 feet

Overdrill sand backfill bottom 1 feet

Overdrill bentonite backfill bottom 4 feet



Water-tight well plug with padlock

Surface annular seal
☒ Bentonite or
☐ Type I-II cement

Bentonite seal (optional)

Flush threaded O-ring coupling

Schedule 40 PVC screen
slot size 0.010 inches

Granular filter pack kiln dried
Colorado silica sand, #10-20

Bottom flush threaded cap
☐ pointed tip T-200 or
☒ round cap

APPENDIX C

WM
STE MANAGEMENT

Hillsboro Landfill, Inc
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 1209556

stomer Name	3 KINGS ENVIRONMENTAL 3 KINGS	Carrier	SELFHLD SELF HAULED
cket Date	05/07/2009	Vehicle#	3kings Volume
yment Type	Credit Account	Container	
nual Ticket#		Driver	colby
uling Ticket#		Check#	
ute		Billing #	0000442
ate Waste Code		Gen EPA ID	N/A
nifest	na		
stination		Grid	
)	08922		
ofile	103236or (PCS)		
nerator	OR-CALBAG METALS CALBAG METALS		

	Time	Scale	Operator	Inbound		
1	05/07/2009 12:27:47	Inbound 2	ajm		Gross	21580 lb*
t	05/07/2009 13:16:20	Outbound	sdm		Tare	13440 lb
					Net	8140 lb
			* Manual Weight		Tons	4.07

omments

Consumer Comments? We want to know. Please call.

oduct	LD%	Qty	UOM	Rate	Tax	Amount	Origin
Cont Soil Pet-RGC-	100	4.07	Tons	26.50		$107.86	MULT-IN
EVL-Env Fee Lg. -	100	1	Load	6.00		$6.00	MULT-IN
AF1-Approval Fee S	100	1	Each	35.00		$35.00	MULT-IN

Total Tax
Total Ticket $148.86

iver's Signature
M

APPENDIX D

LABORATORY PAGES REMOVED
RELATED TO
NON-PROJECT SAMPLES
DUE TO
PRIVLEGED AND CONFIDENTIAL

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 19, 2008

Yancy Meyer
Blue Mountain Environmental, Inc.
90 Baldwin Road
Walla Walla, WA 99362

Re: Analytical Data for Project E2008/0804
Laboratory Reference No. 0811-009

Dear Yancy:

Enclosed are the analytical results and associated quality control data for samples submitted on November 4, 2008.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

Case Narrative

Samples were collected on October 31 and November 1, 2008 and received by the laboratory on November 4, 2008. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-HCID

Date Extracted: 11-6-08
Date Analyzed: 11-6-08

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	**B9-S-03**	**B7-S-03**
Lab ID:	11-009-18	11-009-21
Gasoline:	**ND**	**ND**
PQL:	24	25
Diesel Fuel:	**ND**	**ND**
PQL:	59	63
Lube Oil:	**ND**	**ND**
PQL:	120	130
Surrogate Recovery:		
o-Terphenyl	106%	97%
Flags:	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-HCID
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-6-08
Date Analyzed: 11-6-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	MB1106S1
Gasoline:	**ND**
PQL:	20
Diesel Fuel:	**ND**
PQL:	50
Lube Oil:	**ND**
PQL:	100
Surrogate Recovery:	
o-Terphenyl	87%
Flags	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx

Date Extracted: 10-10-08
Date Analyzed: 10-11-08

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	**B9-S-03**	**B7-S-03**
Lab ID:	11-009-18	11-009-21
Diesel Range:	**ND**	**ND**
PQL:	29	31
Identification:	---	---
Lube Oil Range:	**ND**	**160**
PQL:	59	63
Identification:	---	Lube Oil
Surrogate Recovery		
o-Terphenyl:	81%	70%
Flags:	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-10-08
Date Analyzed: 11-10-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	MB1110S1
Diesel Range:	**ND**
PQL:	25
Identification:	---
Lube Oil Range:	**ND**
PQL:	50
Identification:	---
Surrogate Recovery	
o-Terphenyl:	110%
Flags:	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-11-08
Date Analyzed:	11-11-08
Matrix:	Soil
Units:	mg/kg (ppm)

Lab ID:	MB1111S1
Diesel Range:	**ND**
PQL:	25
Identification:	---
Lube Oil Range:	**ND**
PQL:	50
Identification:	---
Surrogate Recovery	
o-Terphenyl:	84%
Flags:	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-10-08
Date Analyzed: 11-10-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	11-034-07	11-034-07 DUP
Diesel Range:	**ND**	**ND**
PQL:	25	25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	77%	88%
Flags:	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	11-050-01	11-050-01 DUP
Diesel Range:	**242**	**231**
PQL:	25	25
RPD:	5	
Surrogate Recovery		
o-Terphenyl:	74%	77%
Flags:	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-S-3**					
Laboratory ID:	11-009-04					
Naphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Fluorene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Phenanthrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Chrysene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*60*	*39 - 110*				
2-Fluorobiphenyl	*50*	*41 - 107*				
Terphenyl-d14	*73*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-S-6**					
Laboratory ID:	11-009-05					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Fluorene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Anthracene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Pyrene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Chrysene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	11-10-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*56*	*39 - 110*				
2-Fluorobiphenyl	*47*	*41 - 107*				
Terphenyl-d14	*67*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-S-11**					
Laboratory ID:	11-009-06					
Naphthalene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthylene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Fluorene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Phenanthrene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Anthracene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Fluoranthene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Pyrene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Chrysene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270/SIM	11-10-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*61*	*39 - 110*				
2-Fluorobiphenyl	*52*	*41 - 107*				
Terphenyl-d14	*69*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B9-S-03**					
Laboratory ID:	11-009-18					
Naphthalene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**0.010**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**0.012**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**0.0091**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**0.0081**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**0.011**	0.0078	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*76*	*39 - 110*				
2-Fluorobiphenyl	*68*	*41 - 107*				
Terphenyl-d14	*76*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B9-S-09**					
Laboratory ID:	11-009-20					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*74*	*39 - 110*				
2-Fluorobiphenyl	*56*	*41 - 107*				
Terphenyl-d14	*64*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B7-S-03**					
Laboratory ID:	11-009-21					
Naphthalene	**0.031**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**0.015**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**0.010**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**0.13**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**0.016**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**0.26**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**0.12**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**0.55**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**0.53**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**0.27**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**0.48**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**1.4**	0.083	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**0.64**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**0.64**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**1.6**	0.083	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**0.62**	0.0083	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**2.5**	0.083	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*74*	*39 - 110*				
2-Fluorobiphenyl	*68*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B7-S-06**					
Laboratory ID:	11-009-22					
Naphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*79*	*39 - 110*				
2-Fluorobiphenyl	*59*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B7-S-09**					
Laboratory ID:	11-009-23					
Naphthalene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*53*	*41 - 107*				
Terphenyl-d14	*66*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1107S2					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*61*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1110S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*60*	*39 - 110*				
2-Fluorobiphenyl	*54*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-03										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0511**	**0.0529**	0.0833	0.0833	ND	61	64	45 - 94	3	24	
Acenaphthylene	**0.0565**	**0.0619**	0.0833	0.0833	ND	68	74	51 - 104	9	25	
Acenaphthene	**0.0532**	**0.0580**	0.0833	0.0833	ND	64	70	53 - 103	9	21	
Fluorene	**0.0585**	**0.0636**	0.0833	0.0833	ND	70	76	57 - 107	8	19	
Phenanthrene	**0.0634**	**0.0659**	0.0833	0.0833	ND	76	79	61 - 104	4	17	
Anthracene	**0.0649**	**0.0679**	0.0833	0.0833	ND	78	82	58 - 102	5	14	
Fluoranthene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	69 - 109	2	27	
Pyrene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	71 - 114	2	27	
Benzo[a]anthracene	**0.0664**	**0.0673**	0.0833	0.0833	ND	80	81	61 - 123	1	18	
Chrysene	**0.0698**	**0.0710**	0.0833	0.0833	ND	84	85	66 - 124	2	19	
Benzo[b]fluoranthene	**0.0748**	**0.0752**	0.0833	0.0833	ND	90	90	72 - 114	1	26	
Benzo[k]fluoranthene	**0.0718**	**0.0720**	0.0833	0.0833	ND	86	86	70 - 115	0	17	
Benzo[a]pyrene	**0.0679**	**0.0687**	0.0833	0.0833	ND	82	82	57 - 104	1	18	
Indeno(1,2,3-c,d)pyrene	**0.0751**	**0.0757**	0.0833	0.0833	ND	90	91	63 - 121	1	20	
Dibenz[a,h]anthracene	**0.0762**	**0.0766**	0.0833	0.0833	ND	91	92	62 - 125	1	15	
Benzo[g,h,i]perylene	**0.0746**	**0.0748**	0.0833	0.0833	ND	90	90	64 - 117	0	21	
Surrogate:											
Nitrobenzene-d5						*66*	*68*	*39 - 110*			
2-Fluorobiphenyl						*57*	*61*	*41 - 107*			
Terphenyl-d14						*76*	*77*	*54 - 126*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-09										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0429**	**0.0466**	0.0833	0.0833	ND	52	56	45 - 94	8	24	
Acenaphthylene	**0.0485**	**0.0513**	0.0833	0.0833	ND	58	62	51 - 104	6	25	
Acenaphthene	**0.0465**	**0.0488**	0.0833	0.0833	ND	56	59	53 - 103	5	21	
Fluorene	**0.0489**	**0.0520**	0.0833	0.0833	ND	59	62	57 - 107	6	19	
Phenanthrene	**0.0559**	**0.0565**	0.0833	0.0833	ND	67	68	61 - 104	1	17	
Anthracene	**0.0540**	**0.0543**	0.0833	0.0833	ND	65	65	58 - 102	1	14	
Fluoranthene	**0.0639**	**0.0636**	0.0833	0.0833	ND	77	76	69 - 109	0	27	
Pyrene	**0.0651**	**0.0646**	0.0833	0.0833	ND	78	78	71 - 114	1	27	
Benzo[a]anthracene	**0.0587**	**0.0588**	0.0833	0.0833	ND	70	71	61 - 123	0	18	
Chrysene	**0.0641**	**0.0637**	0.0833	0.0833	ND	77	76	66 - 124	1	19	
Benzo[b]fluoranthene	**0.0630**	**0.0648**	0.0833	0.0833	ND	76	78	72 - 114	3	26	
Benzo[k]fluoranthene	**0.0638**	**0.0629**	0.0833	0.0833	ND	77	76	70 - 115	1	17	
Benzo[a]pyrene	**0.0574**	**0.0577**	0.0833	0.0833	ND	69	69	57 - 104	1	18	
Indeno(1,2,3-c,d)pyrene	**0.0668**	**0.0669**	0.0833	0.0833	ND	80	80	63 - 121	0	20	
Dibenz[a,h]anthracene	**0.0687**	**0.0688**	0.0833	0.0833	ND	82	83	62 - 125	0	15	
Benzo[g,h,i]perylene	**0.0682**	**0.0676**	0.0833	0.0833	ND	82	81	64 - 117	1	21	
Surrogate:											
Nitrobenzene-d5						*61*	*70*	*39 - 110*			
2-Fluorobiphenyl						*52*	*55*	*41 - 107*			
Terphenyl-d14						*71*	*67*	*54 - 126*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B9-S-06**					
Laboratory ID:	11-009-19					
Naphthalene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0088	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*52*	*39 - 110*				
2-Fluorobiphenyl	*59*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1114S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*57*	*39 - 110*				
2-Fluorobiphenyl	*64*	*41 - 107*				
Terphenyl-d14	*80*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1114S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0493**	**0.0507**	0.0833	0.0833	59	61	45 - 94	3	24	
Acenaphthylene	**0.0661**	**0.0647**	0.0833	0.0833	79	78	51 - 104	2	25	
Acenaphthene	**0.0634**	**0.0651**	0.0833	0.0833	76	78	53 - 103	3	21	
Fluorene	**0.0704**	**0.0712**	0.0833	0.0833	85	85	57 - 107	1	19	
Phenanthrene	**0.0717**	**0.0748**	0.0833	0.0833	86	90	61 - 104	4	17	
Anthracene	**0.0721**	**0.0756**	0.0833	0.0833	87	91	58 - 102	5	14	
Fluoranthene	**0.0756**	**0.0793**	0.0833	0.0833	91	95	69 - 109	5	27	
Pyrene	**0.0766**	**0.0809**	0.0833	0.0833	92	97	71 - 114	5	27	
Benzo[a]anthracene	**0.0686**	**0.0717**	0.0833	0.0833	82	86	61 - 123	4	18	
Chrysene	**0.0736**	**0.0777**	0.0833	0.0833	88	93	66 - 124	5	19	
Benzo[b]fluoranthene	**0.0809**	**0.0844**	0.0833	0.0833	97	101	72 - 114	4	26	
Benzo[k]fluoranthene	**0.0769**	**0.0829**	0.0833	0.0833	92	100	70 - 115	8	17	
Benzo[a]pyrene	**0.0741**	**0.0788**	0.0833	0.0833	89	95	57 - 104	6	18	
Indeno(1,2,3-c,d)pyrene	**0.0787**	**0.0822**	0.0833	0.0833	94	99	63 - 121	4	20	
Dibenz[a,h]anthracene	**0.0788**	**0.0824**	0.0833	0.0833	95	99	62 - 125	4	15	
Benzo[g,h,i]perylene	**0.0772**	**0.0809**	0.0833	0.0833	93	97	64 - 117	5	21	
Surrogate:										
Nitrobenzene-d5					*65*	*65*	*39 - 110*			
2-Fluorobiphenyl					*71*	*70*	*41 - 107*			
Terphenyl-d14					*81*	*86*	*54 - 126*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-S-3**					
Laboratory ID:	11-009-04					
Aroclor 1016	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*88*	*35-127*				
Client ID:	**MW4-S-6**					
Laboratory ID:	11-009-05					
Aroclor 1016	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*86*	*35-127*				
Client ID:	**MW4-S-11**					
Laboratory ID:	11-009-06					
Aroclor 1016	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.061	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*88*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B9-S-03**					
Laboratory ID:	11-009-18					
Aroclor 1016	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.059	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*95*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B9-S-09**					
Laboratory ID:	11-009-20					
Aroclor 1016	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-5-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*91*	*35-127*				
Client ID:	**B7-S-03**					
Laboratory ID:	11-009-21					
Aroclor 1016	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.063	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*71*	*35-127*				
Client ID:	**B7-S-06**					
Laboratory ID:	11-009-22					
Aroclor 1016	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*81*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B7-S-09**					
Laboratory ID:	11-009-23					
Aroclor 1016	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*83*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1105S1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*90*	*35-127*				
Laboratory ID:	MB1106S1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*98*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-03										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.403**	**0.382**	0.500	0.500	ND	**81**	**76**	24-128	5	14	
Surrogate:											
DCB						*84*	*81*	*35-127*			
Laboratory ID:	11-009-24										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.425**	**0.401**	0.500	0.500	ND	**85**	**80**	24-128	6	14	
Surrogate:											
DCB						*73*	*72*	*35-127*			
SPIKE BLANKS											
Laboratory ID:	SB1105S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.428**	**0.397**	0.500	0.500	N/A	**86**	**79**	69-119	8	15	
Surrogate:											
DCB						*89*	*81*	*35-127*			
Laboratory ID:	SB1106S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.388**	**0.445**	0.500	0.500	N/A	**78**	**89**	69-119	14	15	
Surrogate:											
DCB						*69*	*72*	*35-127*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B9-S-06**					
Laboratory ID:	11-009-19					
Aroclor 1016	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1221	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1232	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1242	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1248	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1254	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1260	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1262	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Aroclor 1268	**ND**	0.066	EPA 8082	11-14-08	11-15-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*69*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114S2					
Aroclor 1016	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*77*	*35-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-19										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.351**	**0.316**	0.500	0.500	ND	**70**	**63**	24-128	10	14	
Surrogate:											
DCB						*74*	*68*	*35-127*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-04
Client ID: MW4-S-3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**170**	3.2
Cadmium	6010B	**ND**	0.65
Chromium	6010B	**23**	0.65
Lead	6010B	**9.6**	6.5
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.65

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-05
Client ID: MW4-S-6

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**190**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**20**	0.68
Lead	6010B	**12**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-06
Client ID: MW4-S-11

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	12
Barium	6010B	**130**	3.0
Cadmium	6010B	**ND**	0.61
Chromium	6010B	**13**	0.61
Lead	6010B	**ND**	6.1
Mercury	7471A	**ND**	0.30
Selenium	6010B	**ND**	12
Silver	6010B	**ND**	0.61

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-18
Client ID: B9-S-03

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	12
Barium	6010B	**180**	2.9
Cadmium	6010B	**ND**	0.59
Chromium	6010B	**18**	0.59
Lead	6010B	**67**	5.9
Mercury	7471A	**ND**	0.29
Selenium	6010B	**ND**	12
Silver	6010B	**ND**	0.59

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-20
Client ID: B9-S-09

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**180**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**18**	0.68
Lead	6010B	**12**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-21
Client ID: B7-S-03

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**250**	3.1
Cadmium	6010B	**ND**	0.63
Chromium	6010B	**24**	0.63
Lead	6010B	**61**	6.3
Mercury	7471A	**ND**	0.31
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.63

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22
Client ID: B7-S-06

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**180**	3.2
Cadmium	6010B	**ND**	0.65
Chromium	6010B	**23**	0.65
Lead	6010B	**12**	6.5
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.65

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-23
Client ID: B7-S-09

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**150**	3.3
Cadmium	6010B	**ND**	0.67
Chromium	6010B	**25**	0.67
Lead	6010B	**10**	6.7
Mercury	7471A	**ND**	0.33
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.67

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1111S2&MB1111S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1112S1&MB1112S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**103**	**101**	3	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**10.9**	**9.85**	10	0.50	
Lead	**5.25**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**139**	**141**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.4**	**17.0**	2	0.50	
Lead	**8.86**	**8.85**	0	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.7**	94	**92.0**	92	2	
Barium	100	**202**	99	**197**	93	3	
Cadmium	50	**49.2**	98	**49.1**	98	0	
Chromium	100	**106**	95	**106**	95	1	
Lead	250	**246**	96	**245**	96	0	
Mercury	0.50	**0.520**	104	**0.524**	105	1	
Selenium	100	**94.4**	94	**92.5**	92	2	
Silver	25	**21.2**	85	**21.0**	84	1	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.4**	93	**94.7**	95	2	
Barium	100	**239**	100	**238**	99	0	
Cadmium	50	**48.6**	97	**48.4**	97	0	
Chromium	100	**112**	95	**111**	94	1	
Lead	250	**244**	94	**242**	93	1	
Mercury	0.50	**0.500**	100	**0.501**	100	0	
Selenium	100	**89.1**	89	**94.6**	95	6	
Silver	25	**21.0**	84	**20.4**	82	3	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-19
Client ID: B9-S-06

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**260**	3.3
Cadmium	6010B	**ND**	0.66
Chromium	6010B	**25**	0.66
Lead	6010B	**17**	6.6
Mercury	7471A	**ND**	0.33
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.66

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1117S1&MB1117S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-19

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**10.1**	NA	10	
Barium	**196**	**197**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**19.2**	**18.9**	1	0.50	
Lead	**12.7**	**12.2**	4	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-19

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.6**	100	**99.4**	99	0	
Barium	100	**290**	94	**287**	91	1	
Cadmium	50	**48.2**	96	**47.9**	96	1	
Chromium	100	**112**	93	**111**	92	1	
Lead	250	**247**	94	**245**	93	1	
Mercury	0.50	**0.501**	100	**0.498**	100	1	
Selenium	100	**94.2**	94	**92.9**	93	1	
Silver	25	**20.2**	81	**20.1**	80	0	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

% MOISTURE

Date Analyzed: 11-5&10-08

Client ID	Lab ID	% Moisture
MW4-S-3	11-009-04	23
MW4-S-6	11-009-05	27
MW4-S-11	11-009-06	18
B9-S-03	11-009-18	15
B9-S-06	11-009-19	24
B9-S-09	11-009-20	26
B7-S-03	11-009-21	20
B7-S-06	11-009-22	23
B7-S-09	11-009-23	25
B3-S-09	11-009-24	19

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: BMEC INC

Project Number: E2008/0804

Project Name: CALBAG

Project Manager: R. KENT

Sampled by: Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 11-009

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664								% Moisture
4	MW4-S-3		1430	SOIL	3							X	X			X										
5	MW4-S-6		1435	SOIL	3							X	X			X										
6	MW4-S-11		1445	SOIL	3							X	X			X										

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report [ ]

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OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: BMEC, INC
Project Number: E2008/0804
Project Name: CALBAG
Project Manager: R. KENT
Sampled by: Y. MEYER

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
(TPH analysis 5 working days)
☐ ____________ (other)

Laboratory Number: 11-009

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
18	B9-S-03		1335	SOIL		X		X				X	X			X			
19	B9-S-06		1340	SOIL								X	X			X			X

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
X Added 11/13/08. DB

Chromatograms with final report ☐

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OnSite Environmental Inc.

Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: BMEC INC

Project Number:

Project Name: CALBAG

Project Manager: R. KENT

Sampled by: Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ________ (other)

Laboratory Number: 11-009

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	~~TCLP Metals~~ TOTAL RCRA 8	HEM by 1664							% Moisture
		11-1-08	1345																						X
21	B7-S-03	↓	1425	Soil	3	X	[illegible]	X				X	X				X								↓
22	B7-S-06	↓	1430	Soil	3							X	X				X								↓
23	B7-S-09	↓	1435	Soil	3							X	X				X								↓

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1250
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

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OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 13, 2008

Yancy Meyer
Blue Mountain Environmental, Inc.
90 Baldwin Road
Walla Walla, WA 99362

Re: Analytical Data for Project E2008/0804
Laboratory Reference No. 0811-008

Dear Yancy:

Enclosed are the analytical results and associated quality control data for samples submitted on November 4, 2008.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

Case Narrative

Samples were collected on October 30, 2008 and received by the laboratory on November 4, 2008. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-8-4**					
Laboratory ID:	11-008-01					
Naphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*72*	*39 - 110*				
2-Fluorobiphenyl	*60*	*41 - 107*				
Terphenyl-d14	*67*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-8-8**					
Laboratory ID:	11-008-02					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*72*	*39 - 110*				
2-Fluorobiphenyl	*64*	*41 - 107*				
Terphenyl-d14	*79*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-8-12**					
Laboratory ID:	11-008-03					
Naphthalene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*73*	*39 - 110*				
2-Fluorobiphenyl	*58*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1107S2					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*61*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-03										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0511**	**0.0529**	0.0833	0.0833	ND	61	64	45 - 94	3	24	
Acenaphthylene	**0.0565**	**0.0619**	0.0833	0.0833	ND	68	74	51 - 104	9	25	
Acenaphthene	**0.0532**	**0.0580**	0.0833	0.0833	ND	64	70	53 - 103	9	21	
Fluorene	**0.0585**	**0.0636**	0.0833	0.0833	ND	70	76	57 - 107	8	19	
Phenanthrene	**0.0634**	**0.0659**	0.0833	0.0833	ND	76	79	61 - 104	4	17	
Anthracene	**0.0649**	**0.0679**	0.0833	0.0833	ND	78	82	58 - 102	5	14	
Fluoranthene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	69 - 109	2	27	
Pyrene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	71 - 114	2	27	
Benzo[a]anthracene	**0.0664**	**0.0673**	0.0833	0.0833	ND	80	81	61 - 123	1	18	
Chrysene	**0.0698**	**0.0710**	0.0833	0.0833	ND	84	85	66 - 124	2	19	
Benzo[b]fluoranthene	**0.0748**	**0.0752**	0.0833	0.0833	ND	90	90	72 - 114	1	26	
Benzo[k]fluoranthene	**0.0718**	**0.0720**	0.0833	0.0833	ND	86	86	70 - 115	0	17	
Benzo[a]pyrene	**0.0679**	**0.0687**	0.0833	0.0833	ND	82	82	57 - 104	1	18	
Indeno(1,2,3-c,d)pyrene	**0.0751**	**0.0757**	0.0833	0.0833	ND	90	91	63 - 121	1	20	
Dibenz[a,h]anthracene	**0.0762**	**0.0766**	0.0833	0.0833	ND	91	92	62 - 125	1	15	
Benzo[g,h,i]perylene	**0.0746**	**0.0748**	0.0833	0.0833	ND	90	90	64 - 117	0	21	
Surrogate:											
Nitrobenzene-d5						*66*	*68*	*39 - 110*			
2-Fluorobiphenyl						*57*	*61*	*41 - 107*			
Terphenyl-d14						*76*	*77*	*54 - 126*			

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-8-4**					
Laboratory ID:	11-008-01					
Aroclor 1016	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*57*	*35-127*				
Client ID:	**B-8-8**					
Laboratory ID:	11-008-02					
Aroclor 1016	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*56*	*35-127*				
Client ID:	**B-8-12**					
Laboratory ID:	11-008-03					
Aroclor 1016	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*61*	*35-127*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1106S1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*98*	*35-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-24										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.425**	**0.401**	0.500	0.500	ND	**85**	**80**	24-128	6	14	
Surrogate:											
DCB						*73*	*72*	*35-127*			

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

ORGANOCHLORINE PESTICIDES by EPA 8081A QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1111S1					
alpha-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
gamma-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
beta-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
delta-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Heptachlor	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Aldrin	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Heptachlor Epoxide	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
gamma-Chlordane	**ND**	10	EPA 8081	11-11-08	11-11-08	
alpha-Chlordane	**ND**	10	EPA 8081	11-11-08	11-11-08	
4,4'-DDE	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endosulfan I	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Dieldrin	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endrin	**ND**	10	EPA 8081	11-11-08	11-11-08	
4,4'-DDD	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endosulfan II	**ND**	10	EPA 8081	11-11-08	11-11-08	
4,4'-DDT	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endrin Aldehyde	**ND**	10	EPA 8081	11-11-08	11-11-08	
Methoxychlor	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endsulfan Sulfate	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endrin Ketone	**ND**	10	EPA 8081	11-11-08	11-11-08	
Toxaphene	**ND**	50	EPA 8081	11-11-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*71*	*40-109*				
DCB	*79*	*30-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-008-05										
	MS	MSD	MS	MSD		MS	MSD				
gamma-BHC	**31.0**	**31.3**	50.0	50.0	ND	**62**	**63**	48-94	1	10	
Heptachlor	**29.8**	**29.8**	50.0	50.0	ND	**60**	**60**	39-103	0	9	
Aldrin	**30.2**	**29.8**	50.0	50.0	ND	**60**	**60**	39-93	1	8	
Dieldrin	**78.4**	**78.4**	125	125	ND	**63**	**63**	44-101	0	9	
Endrin	**73.0**	**74.6**	125	125	ND	**58**	**60**	28-105	2	12	
4,4'-DDT	**67.1**	**69.8**	125	125	ND	**54**	**56**	20-120	4	34	
Surrogate:											
TCMX						*58*	*58*	*40-109*			
DCB						*65*	*66*	*30-112*			

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-01
Client ID: B-8-4

Analyte	Method	Result	PQL
Arsenic	6010B	**13**	13
Barium	6010B	**270**	3.3
Cadmium	6010B	**ND**	0.67
Chromium	6010B	**26**	0.67
Lead	6010B	**14**	6.7
Mercury	7471A	**ND**	0.33
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.67

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-02
Client ID: B-8-8

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**170**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**18**	0.68
Lead	6010B	**15**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-03
Client ID: B-8-12

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**150**	3.5
Cadmium	6010B	**ND**	0.69
Chromium	6010B	**22**	0.69
Lead	6010B	**12**	6.9
Mercury	7471A	**ND**	0.35
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.69

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1112S1&MB1112S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**139**	**141**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.4**	**17.0**	2	0.50	
Lead	**8.86**	**8.85**	0	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.4**	93	**94.7**	95	2	
Barium	100	**239**	100	**238**	99	0	
Cadmium	50	**48.6**	97	**48.4**	97	0	
Chromium	100	**112**	95	**111**	94	1	
Lead	250	**244**	94	**242**	93	1	
Mercury	0.50	**0.500**	100	**0.501**	100	0	
Selenium	100	**89.1**	89	**94.6**	95	6	
Silver	25	**21.0**	84	**20.4**	82	3	

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

% MOISTURE

Date Analyzed: 11-6-08

Client ID	Lab ID	% Moisture
B-8-4	11-008-01	25
B-8-8	11-008-02	26
B-8-12	11-008-03	28

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: BMEC

Project Number: E2008/0804

Pro

Pro

Sa

Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 11-008

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
1	B-8-4	10-30-08	1015	SOIL	3							X	X			X			X
2	B-8-8	|	1020	SOIL	3							X	X			X			|
3	B-8-12	|	1030	SOIL	3							X	X			X			|

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

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OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: BMEC, INC
Project Number: E2008/10804
Project Name: CALBAG
Project Manager: ~~Y. Meyer~~ R. KENT
Sampled by: Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 11-008

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				

Comments/Special Instructions:

Reviewed by/Date

Reviewed by/Date

Chromatograms with final report [ ]

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 24, 2008

Peter Trabusiner
Blue Mountain Environmental, Inc.
1500 Adair Drive
Richland, WA 99352

Re: Analytical Data for Project 080819
Laboratory Reference No. 0811-073

Dear Peter:

Enclosed are the analytical results and associated quality control data for samples submitted on November 13, 2008.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

Case Narrative

Samples were collected on November 10, 2008 and received by the laboratory on November 13, 2008. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

The spike blank and spike blank duplicate had two RPD's out of control limits. Because the recoveries for these compounds were within control limits and the holding times for the samples had expired, no further action was taken.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Client ID:				**MW-4-45/55**		
Lab ID:				11-073-04		
		Flags	PQL	**Result**	Flags	PQL
TPH-Gas			100	**ND**		100
Surrogate Recovery:						
Fluorobenzene				100%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1113W2

	Result	Flags	PQL
TPH-Gas	**ND**		100
Surrogate Recovery:			
Fluorobenzene	104%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Lab ID:	11-072-04	11-072-04		
	Original	**Duplicate**	**RPD**	**Flags**
TPH-Gas	**ND**	**ND**	NA	
Surrogate Recovery:				
Fluorobenzene	102%	103%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx

Date Extracted:	11-19-08
Date Analyzed:	11-19-08
Matrix:	Water
Units:	mg/L (ppm)

Client ID:	**MW-4-45/55**
Lab ID:	11-073-04
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	85%
Flags:	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-19-08
Date Analyzed:	11-19-08
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB1119W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	80%
Flags:	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: mg/L (ppm)

Lab ID:	11-073-01	11-073-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.24
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	84%	70%
Flags:	Y	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	11-17-08
Date Analyzed:	11-17-08
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	11-073-04
Client ID:	**MW-4-45/55**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 11-073-04
Client ID: MW-4-45/55

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	0.30		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	90	71-126
Toluene-d8	95	76-116
4-Bromofluorobenzene	83	70-123

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted: 11-17-08
Date Analyzed: 11-17-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1117W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB1117W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	94	71-126
Toluene-d8	98	76-116
4-Bromofluorobenzene	85	70-123

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB1117W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits
1,1-Dichloroethene	10.0	10.5	105	10.3	103	70-130
Benzene	10.0	9.95	100	9.84	98	70-130
Trichloroethene	10.0	10.6	106	10.5	105	70-116
Toluene	10.0	10.3	103	10.3	103	76-119
Chlorobenzene	10.0	10.1	101	10.0	100	77-112

	RPD	RPD Limit	Flags
1,1-Dichloroethene	2	20	
Benzene	1	16	
Trichloroethene	1	16	
Toluene	0	15	
Chlorobenzene	1	15	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-45/55**					
Laboratory ID:	11-073-04					
Naphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*34 - 100*				
Pyrene-d10	*92*	*40 - 100*				
Terphenyl-d14	*83*	*48 - 112*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1114W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*34 - 100*				
Pyrene-d10	*91*	*40 - 100*				
Terphenyl-d14	*85*	*48 - 112*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1114W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.394**	**0.380**	0.500	0.500	79	76	20 - 116	4	38	
Acenaphthylene	**0.439**	**0.355**	0.500	0.500	88	71	23 - 109	21	29	
Acenaphthene	**0.420**	**0.396**	0.500	0.500	84	79	28 - 108	6	30	
Fluorene	**0.444**	**0.411**	0.500	0.500	89	82	34 - 111	8	25	
Phenanthrene	**0.428**	**0.402**	0.500	0.500	86	80	40 - 107	6	17	
Anthracene	**0.473**	**0.399**	0.500	0.500	95	80	38 - 107	17	20	
Fluoranthene	**0.477**	**0.447**	0.500	0.500	95	89	46 - 114	6	15	
Pyrene	**0.463**	**0.434**	0.500	0.500	93	87	50 - 116	6	16	
Benzo[a]anthracene	**0.411**	**0.384**	0.500	0.500	82	77	47 - 115	7	15	
Chrysene	**0.408**	**0.370**	0.500	0.500	82	74	52 - 118	10	16	
Benzo[b]fluoranthene	**0.454**	**0.437**	0.500	0.500	91	87	51 - 118	4	17	
Benzo[k]fluoranthene	**0.439**	**0.384**	0.500	0.500	88	77	53 - 116	13	19	
Benzo[a]pyrene	**0.460**	**0.233**	0.500	0.500	92	47	42 - 111	66	21	L
Indeno(1,2,3-c,d)pyrene	**0.430**	**0.385**	0.500	0.500	86	77	47 - 120	11	18	
Dibenz[a,h]anthracene	**0.398**	**0.323**	0.500	0.500	80	65	48 - 122	21	18	L
Benzo[g,h,i]perylene	**0.403**	**0.342**	0.500	0.500	81	68	47 - 116	16	17	
Surrogate:										
2-Fluorobiphenyl					*77*	*71*	*34 - 100*			
Pyrene-d10					*91*	*85*	*40 - 100*			
Terphenyl-d14					*86*	*82*	*48 - 112*			

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-45/55**					
Laboratory ID:	11-073-04					
Aroclor 1016	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1221	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1232	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1242	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1248	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1254	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1260	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1262	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1268	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*78*	*35-135*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114W1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*81*	*35-135*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1114W1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.410**	**0.384**	0.500	0.500	N/A	**82**	**77**	61-114	7	12	
Surrogate:											
DCB						*85*	*82*	*35-135*			

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-45/55**					
Laboratory ID:	11-073-04					
alpha-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
beta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
delta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Aldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor Epoxide	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
alpha-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDE	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan I	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Dieldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDD	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan II	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDT	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Aldehyde	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Methoxychlor	**ND**	0.0094	EPA 8081	11-14-08	11-14-08	
Endsulfan Sulfate	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Ketone	**ND**	0.019	EPA 8081	11-14-08	11-14-08	
Toxaphene	**ND**	0.047	EPA 8081	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*55*	*30-101*				
DCB	*77*	*30-119*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE
PESTICIDES by EPA 8081A
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114W1					
alpha-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
gamma-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
beta-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
delta-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Heptachlor	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Aldrin	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
gamma-Chlordane	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
alpha-Chlordane	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
4,4'-DDE	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endosulfan I	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Dieldrin	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endrin	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
4,4'-DDD	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endosulfan II	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
4,4'-DDT	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endrin Aldehyde	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Methoxychlor	**ND**	0.010	EPA 8081	11-14-08	11-14-08	
Endsulfan Sulfate	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endrin Ketone	**ND**	0.020	EPA 8081	11-14-08	11-14-08	
Toxaphene	**ND**	0.050	EPA 8081	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*59*	*30-101*				
DCB	*84*	*30-119*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE
PESTICIDES by EPA 8081A
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS											
Laboratory ID:	SB1114W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0351**	**0.0370**	0.0500	0.0500	N/A	**70**	**74**	46-90	5	19	
Heptachlor	**0.0349**	**0.0376**	0.0500	0.0500	N/A	**70**	**75**	41-91	7	29	
Aldrin	**0.0335**	**0.0361**	0.0500	0.0500	N/A	**67**	**72**	41-80	7	34	
Dieldrin	**0.102**	**0.105**	0.125	0.125	N/A	**82**	**84**	57-96	3	19	
Endrin	**0.0900**	**0.0918**	0.125	0.125	N/A	**72**	**73**	50-98	2	19	
4,4'-DDT	**0.103**	**0.103**	0.125	0.125	N/A	**82**	**83**	53-107	0	18	
Surrogate:											
TCMX						*57*	*58*	*30-101*			
DCB						*83*	*81*	*30-119*			

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-04
Client ID: MW-4-45/55

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1119W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	28	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**114**	103	**116**	106	2	
Arsenic	110	**112**	102	**114**	104	2	
Beryllium	110	**109**	99	**113**	103	4	
Cadmium	110	**112**	102	**114**	104	2	
Chromium	110	**108**	98	**110**	100	2	
Copper	110	**102**	93	**105**	95	3	
Lead	110	**109**	99	**111**	101	2	
Mercury	12.5	**12.5**	100	**12.4**	99	1	
Nickel	110	**106**	97	**109**	99	3	
Selenium	110	**113**	102	**114**	104	1	
Silver	110	**108**	98	**112**	102	4	
Thallium	110	**110**	100	**111**	101	1	
Zinc	110	**115**	105	**117**	107	2	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-04
Client ID: MW-4-45/55

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1113D1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**ND**	**ND**	NA	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	50	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	200	**206**	103	**211**	106	2	
Arsenic	200	**209**	105	**208**	104	0	
Beryllium	200	**202**	101	**200**	100	1	
Cadmium	200	**205**	103	**208**	104	1	
Chromium	200	**201**	100	**200**	100	0	
Copper	200	**207**	104	**206**	103	0	
Lead	200	**203**	101	**207**	104	2	
Mercury	12.5	**12.5**	100	**12.6**	101	1	
Nickel	200	**196**	98	**201**	101	3	
Selenium	200	**207**	103	**209**	105	1	
Silver	200	**201**	100	**203**	102	1	
Thallium	200	**203**	102	**206**	103	1	
Zinc	200	**205**	102	**207**	103	1	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664

Date Extracted:	11-20-08
Date Analyzed:	11-20-08
Matrix:	Water
Units:	mg/L (ppm)
Client ID:	**MW-4-45/55**
Lab ID:	11-073-04
Hexane Extractable Material:	**ND**
PQL:	5.2

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-20-08
Date Analyzed:	11-20-08
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB1120W1
Hexane Extractable Material:	**ND**
PQL:	5.0

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664
SB/SBD QUALITY CONTROL

Date Extracted:	11-20-08
Date Analyzed:	11-20-08
Matrix:	Water
Units:	mg/L (ppm)
Spike Level:	40 ppm

Lab ID:	SB1120W1	SB1120W1Dup
Hexane Extractable Material:	**40.2**	**37.5**
PQL:	5.0	5.0
Percent Recovery:	101	94
Control Limits:	91-110	91-110
RPD:	7	
Control Limits:	15	

Flags:

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Page 1 of 1

Company: BMEC (GeoPro Geologic Services LLC)
Project Number: 080819
Project Name: Calbag Metals Co. Phase II
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 11-073

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/~~BTEX~~	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total ~~RCRA~~ Metals (8) PP	~~TCLP~~ DIS. Metals PP	HEM by 1664	VPH	EPH	TOC				% Moisture
4	MW-4-45/55	11/10/08	1335	W	~~16~~ 17		X	X	X			X	X	X		X	X	X			X				
	SEE ATTACHMENT FOR REQUESTED ANALYSES																								

	Signature	Company	Date	Time
Relinquished by	[signature]	GeoPro LLC for BMEC	11/12/08	3 30 pm
Received by	Fed Ex Airbill 865347158070			
Relinquished by				
Received by	[signature]	OSE	11/13/08	1000
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
SEE ATTACHMENT (online version scroll)
PCB - Two 1 Liter Amber bottles unpreserved
TPH-Gx/BTEX-Two 40 mL Voa Vials preserved with Hydrochloric acid
TPH-Diesel-Two 500 mL Amber bottles preserved with Hydrochloric acid
Oil/Grease-Two 1 Liter clear widemouth jars preserved with Hydrochloric acid
Total Metals- One 500 mL Poly bottle preserved with Nitric acid

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

11/19/2008

OnSite Environmental Inc
14648 NE 95th Street
Redmond, WA 98052
Attn: David Baumeister

Project: 11-073/080819
Sample Matrix: Water
Date Sampled: 11/10/2008
Date Received: 11/14/2008
Spectra Project: 2008110259

Client ID	Spectra #	Analyte	Result	Units	Method
MW-4-45/55	4	Total Organic Carbon	< 3	mg/L	SM5310 B

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

SPECTRA Laboratories

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11/19/08

OnSite Environmental Inc
14648 NE 95th Street
Redmond WA, 98052
Attn: David Baumeister

Spectra Project #	2008110259
Sample Spiked:	2008110056-1
Spiked Sample Date Analyzed:	11/14/2008
Date Analyzed:	11/19/2008
Units:	mg/L
Applies to Spectra #'s:	1 thru 4

Total Organic Carbon - SM 5310B
Matrix Spike/ Maxtrix Spike Dupilcate Results in Water

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
TOC	4.0	100.0	85.6	81.6	88.8	84.8	3.8

* out of limits
Recovery Limits 60-140%
Sample Conc. of 0.000 = ND

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories
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11/19/2008

OnSite Environmental Inc
14648 NE 95th Street
Redmond WA, 98052
Attn: David Baumeister

Spectra Project #	2008110259
Sample Spiked:	Blank
Date Analyzed:	11/19/2008
Units:	mg/L
Applies to Spectra Sample #'s:	1 thru 4

Total Organic Carbon - SM 5310B
Blank Spike (LCS), Method Blank Results in Water

	Spike Added	LCS Conc.	LCS %Rec	Method Blank Conc. Units: mg/L
TOC	100.0	83.2	83.2	< 3

* out of limits
LCS Recovery limits 56-126%

Steven G. Hibbs
Laboratory Manager

Spectra Laboratories TOC Logbook # 1
Shimadzu TOC-VCSN
Method:SM 5310B

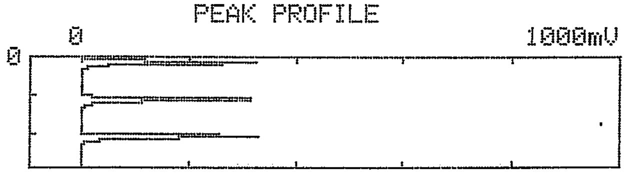
Date	Analyst	Matrix	Sample ID	Wgt/Vol	Result	Comments
11-19-08	SJ	H_2O	500 Cal Std	20ml	483.0	5-19-C
			100 IC Std		2.6	5-20-A
			MBLK 11-19-08		2.6	
			LCS 11-19-08		83.2	5-20-B
			110259-1		3.2	
			2		24.9	
			dup		25.4	
			3		3.0	
			4		2.3	
			25 Chk Std		25.4	5-19-C

SAMPLE NAME : 500 CAL STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	357.1	473.3	TC5	20	1
2	366.5	485.7	TC5	20	1
3	369.8	490.0	TC5	20	1
MN	364.5	483.0			
SD	6.59	8.69			
CV	1.81 %	1.80 %			

PEAK PROFILE



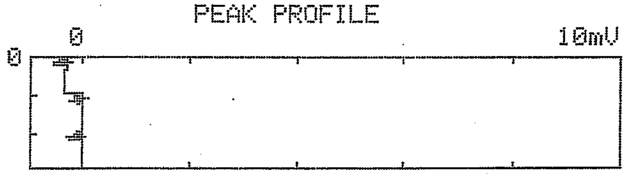
DATE 11(NOV)-19-2008 08:11

SAMPLE NAME : 100 IC STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.218	2.593	TC5	20	1
2	0.208	2.580	TC5	20	1
3	0.224	2.601	TC5	20	1
MN	0.217	2.591			
SD	0.01	0.01			
CV	3.64 %	0.40 %			

PEAK PROFILE



DATE 11(NOV)-19-2008 08:50

SAMPLE NAME : MBLK 11-19-08

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.204	2.574	TC5	20	1
2	0.256	2.643	TC5	20	1
3	0.260	2.649	TC5	20	1
MN	0.240	2.622			
SD	0.03	0.04			
CV	13.1 %	1.59 %			

PEAK PROFILE

DATE 11(NOV)-19-2008 09:03

SAMPLE NAME : LCS 11-19-08

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

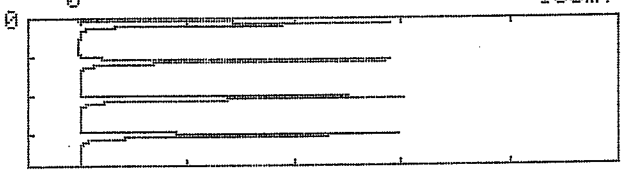
#	AREA	mg/L	C#	INJ	DL
1	60.59	82.22	TC5	20	1
2	60.75	82.43	TC5	20	1

SAMPLE NAME : LCS 11-19-08

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	60.59	82.22	TC5	20	1
2	60.75	82.43	TC5	20	1
3	64.43E	87.28	TC5	20	1
4	62.62	84.89	TC5	20	1
MN	61.32	83.18			
SD	1.13	1.49			
CV	1.84 %	1.79 %			

PEAK PROFILE



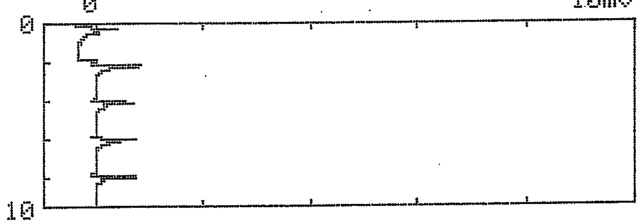
DATE 11(NOV)-19-2008 09:17

SAMPLE NAME : 110259-1

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.937E	3.541	TC5	20	1
2	0.953E	3.562	TC5	20	1
3	0.662	3.178	TC5	20	1
4	0.710	3.242	TC5	20	1
5	0.610	3.110	TC5	20	1
MN	0.661	3.177			
SD	0.05	0.07			
CV	7.53 %	2.07 %			

PEAK PROFILE



DATE 11(NOV)-19-2008 10:47

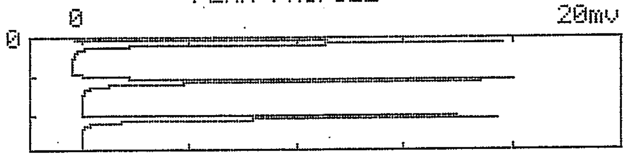
SAMPLE NAME : 110259-2

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	16.92	24.62	TC5	20	1
2	17.41	25.27	TC5	20	1
3	17.01	24.74	TC5	20	1
MN	17.11	24.88			
SD	0.26	0.34			
CV	1.52 %	1.38 %			

PEAK PROFILE

24



DATE 11(NOV)-19-2008 11:17

SAMPLE NAME : 110259-2 DUP

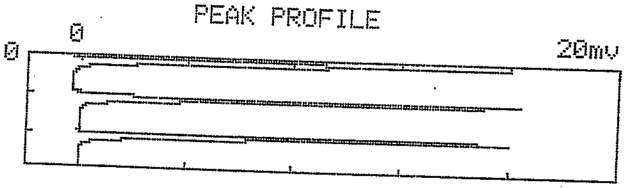
TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,

SAMPLE NAME : 110259-2 DUP

TYPE : NPOC
[INJ 20uL, C# TC5 , DL 1, SP 3.0min,
ACID 0.0%, #WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	17.55	25.45	TC5	20	1
2	17.69	25.64	TC5	20	1
3	17.31	25.14	TC5	20	1
MN	17.52	25.41			
SD	0.19	0.25			
CV	1.10 %	1.00 %			

PEAK PROFILE



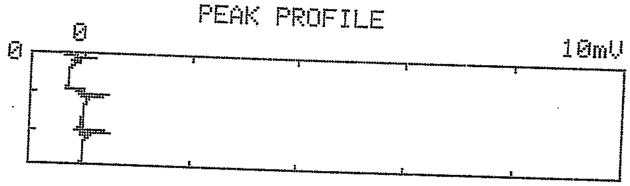
DATE 11(NOV)-19-2008 11:29

SAMPLE NAME : 110259-3

TYPE : NPOC
[INJ 20uL, C# TC5 , DL 1, SP 3.0min,
ACID 0.0%, #WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.607	3.105	TC5	20	1
2	0.432	2.876	TC5	20	1
3	0.501	2.966	TC5	20	1
MN	0.513	2.983			
SD	0.09	0.12			
CV	17.1 %	3.88 %			

PEAK PROFILE



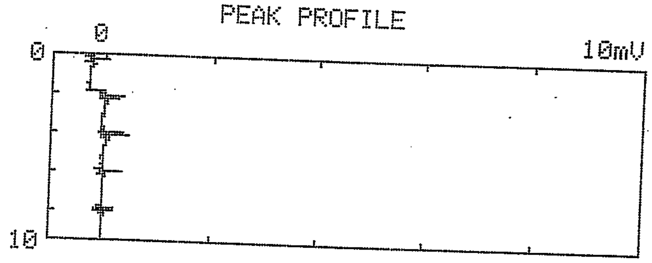
DATE 11(NOV)-19-2008 13:25

SAMPLE NAME : 110259-4

TYPE : NPOC
[INJ 20uL, C# TC5 , DL 1, SP 3.0min,
ACID 0.0%, #WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.000	2.305	TC5	20	1
2	0.000	2.305	TC5	20	1
3	0.495E	2.958	TC5	20	1
4	0.315E	2.721	TC5	20	1
5	0.070	2.398	TC5	20	1
MN	0.023	2.336			
SD	0.04	0.05			
CV	173 %	2.31 %			

PEAK PROFILE



DATE 11(NOV)-19-2008 13:41

SAMPLE NAME : 25 CHK STD

TYPE : NPOC
[INJ 20uL, C# TC5 , DL 1, SP 3.0min,
ACID 0.0%, #WASH 1]

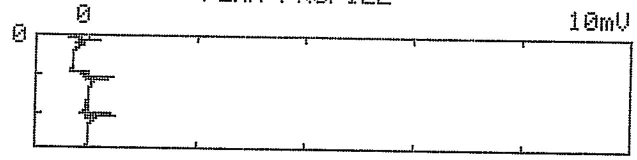
AREA mg/L C# INJ DL

SAMPLE NAME : 110259-3

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.607	3.105	TC5	20	1
2	0.432	2.876	TC5	20	1
3	0.501	2.966	TC5	20	1
MN	0.513	2.983			
SD	0.09	0.12			
CV	17.1 %	3.88 %			

PEAK PROFILE



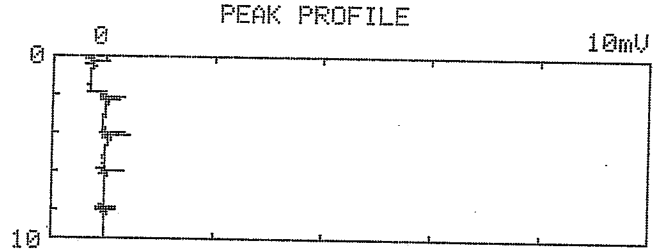
DATE 11(NOV)-19-2008 13:25

SAMPLE NAME : 110259-4

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.000	2.305	TC5	20	1
2	0.000	2.305	TC5	20	1
3	0.495E	2.958	TC5	20	1
4	0.315E	2.721	TC5	20	1
5	0.070	2.398	TC5	20	1
MN	0.023	2.336			
SD	0.04	0.05			
CV	173 %	2.31 %			

PEAK PROFILE



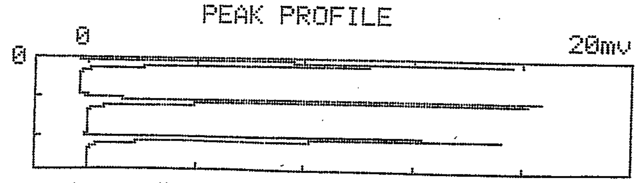
DATE 11(NOV)-19-2008 13:41

SAMPLE NAME : 25 CHK STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	17.40	25.25	TC5	20	1
2	17.60	25.52	TC5	20	1
3	17.53	25.43	TC5	20	1
MN	17.51	25.40			
SD	0.10	0.13			
CV	0.58 %	0.53 %			

PEAK PROFILE



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 3, 2009

Peter Trabusiner
Blue Mountain Environmental, Inc.
1500 Adair Drive
Richland, WA 99352

Re: Analytical Data for Project 081209
Laboratory Reference No. 0902-147

Dear Peter:

Enclosed are the analytical results and associated quality control data for samples submitted on February 23, 2009.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

Case Narrative

Samples were collected on February 20, 2009, and received by the laboratory on February 23, 2009. They were maintained at the laboratory at a temperature of 2°C to 6°C except as noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

NWTPH-Gx

Date Extracted: 2-25-09
Date Analyzed: 2-25-09

Matrix: Water
Units: ug/L (ppb)

Client ID:	**MW-5 40/50**			**MW-6 45/55**		
Lab ID:	02-147-01			02-147-02		
	Result	Flags	PQL	**Result**	Flags	PQL
TPH-Gas	**ND**		100	**ND**		100
Surrogate Recovery:						
Fluorobenzene	89%			90%		

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

NWTPH-Gx
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-25-09
Date Analyzed: 2-25-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0225W1

	Result	Flags	PQL
TPH-Gas	**ND**		100
Surrogate Recovery:			
Fluorobenzene	94%		

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

NWTPH-Gx
DUPLICATE QUALITY CONTROL

Date Extracted: 2-25-09
Date Analyzed: 2-25-09

Matrix: Water
Units: ug/L (ppb)

Lab ID:	02-147-01	02-147-01		
	Original	**Duplicate**	**RPD**	**Flags**
TPH-Gas	**ND**	**ND**	NA	
Surrogate Recovery:				
Fluorobenzene	89%	89%		

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

NWTPH-Dx

Date Extracted: 2-23-09
Date Analyzed: 2-23-09

Matrix: Water
Units: mg/L (ppm)

Client ID:	**MW-5 40/50**	**MW-6 45/55**
Lab ID:	02-147-01	02-147-02
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
Identification:	---	---
Lube Oil Range:	**ND**	**ND**
PQL:	0.40	0.40
Identification:	---	---
Surrogate Recovery		
o-Terphenyl:	91%	98%
Flags:	Y	Y

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-23-09
Date Analyzed:	2-23-09
Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB0223W2
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	89%
Flags:	Y

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 2-23-09
Date Analyzed: 2-23-09

Matrix: Water
Units: mg/L (ppm)

Lab ID:	02-139-01	02-139-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	58%	54%
Flags:	Y	Y

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01
Client ID: MW-5 40/50

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	1.6		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 02-147-01
Client ID: MW-5 40/50

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	71-126
Toluene-d8	84	76-116
4-Bromofluorobenzene	87	70-123

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	2-26-09
Date Analyzed:	2-26-09
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-147-02
Client ID:	**MW-6 45/55**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 02-147-02
Client ID: MW-6 45/55

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	0.21		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	91	71-126
Toluene-d8	89	76-116
4-Bromofluorobenzene	87	70-123

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0226W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0226W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	84	71-126
Toluene-d8	90	76-116
4-Bromofluorobenzene	86	70-123

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0226W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	8.45	85	8.10	81	70-130	
Benzene	10.0	9.68	97	9.43	94	70-130	
Trichloroethene	10.0	9.90	99	9.03	90	70-116	
Toluene	10.0	9.86	99	9.31	93	76-119	
Chlorobenzene	10.0	10.5	105	9.67	97	77-112	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	4	20	
Benzene	3	16	
Trichloroethene	9	16	
Toluene	6	15	
Chlorobenzene	8	15	

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5 40/50**					
Laboratory ID:	02-147-01					
Naphthalene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Fluorene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Anthracene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Pyrene	**ND**	0.095	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Chrysene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*34 - 100*				
Pyrene-d10	*85*	*40 - 100*				
Terphenyl-d14	*91*	*48 - 112*				

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6 45/55**					
Laboratory ID:	02-147-02					
Naphthalene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Fluorene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Anthracene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Pyrene	**ND**	0.094	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Chrysene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*34 - 100*				
Pyrene-d10	*87*	*40 - 100*				
Terphenyl-d14	*100*	*48 - 112*				

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0224W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Fluorene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Anthracene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Pyrene	**ND**	0.10	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Chrysene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*66*	*34 - 100*				
Pyrene-d10	*88*	*40 - 100*				
Terphenyl-d14	*96*	*48 - 112*				

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0224W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.400**	**0.296**	0.500	0.500	80	59	20 - 116	30	38	
Acenaphthylene	**0.344**	**0.289**	0.500	0.500	69	58	23 - 109	17	29	
Acenaphthene	**0.354**	**0.303**	0.500	0.500	71	61	28 - 108	16	30	
Fluorene	**0.401**	**0.354**	0.500	0.500	80	71	34 - 111	12	25	
Phenanthrene	**0.412**	**0.384**	0.500	0.500	82	77	40 - 107	7	17	
Anthracene	**0.373**	**0.345**	0.500	0.500	75	69	38 - 107	8	20	
Fluoranthene	**0.419**	**0.385**	0.500	0.500	84	77	46 - 114	8	15	
Pyrene	**0.455**	**0.435**	0.500	0.500	91	87	50 - 116	4	16	
Benzo[a]anthracene	**0.374**	**0.358**	0.500	0.500	75	72	47 - 115	4	15	
Chrysene	**0.371**	**0.353**	0.500	0.500	74	71	52 - 118	5	16	
Benzo[b]fluoranthene	**0.392**	**0.366**	0.500	0.500	78	73	51 - 118	7	17	
Benzo[k]fluoranthene	**0.334**	**0.313**	0.500	0.500	67	63	53 - 116	6	19	
Benzo[a]pyrene	**0.361**	**0.346**	0.500	0.500	72	69	42 - 111	4	21	
Indeno(1,2,3-c,d)pyrene	**0.358**	**0.350**	0.500	0.500	72	70	47 - 120	2	18	
Dibenz[a,h]anthracene	**0.320**	**0.313**	0.500	0.500	64	63	48 - 122	2	18	
Benzo[g,h,i]perylene	**0.352**	**0.349**	0.500	0.500	70	70	47 - 116	1	17	
Surrogate:										
2-Fluorobiphenyl					*69*	*57*	*34 - 100*			
Pyrene-d10					*89*	*86*	*40 - 100*			
Terphenyl-d14					*94*	*92*	*48 - 112*			

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Lab Traveler: 0902-147
Project: 081209

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5 40/50**					
Laboratory ID:	02-147-01					
Aroclor 1016	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1221	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1232	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1242	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1248	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1254	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1260	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*80*	*35-135*				
Client ID:	**MW-6 45/55**					
Laboratory ID:	02-147-02					
Aroclor 1016	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1221	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1232	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1242	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1248	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1254	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Aroclor 1260	**ND**	0.047	EPA 8082	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*87*	*35-135*				

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Lab Traveler: 0902-147
Project: 081209

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0224W1					
Aroclor 1016	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Aroclor 1221	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Aroclor 1232	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Aroclor 1242	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Aroclor 1248	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Aroclor 1254	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Aroclor 1260	**ND**	0.050	EPA 8082	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*77*	*35-135*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0224W1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.314**	**0.335**	0.500	0.500	N/A	**63**	**67**	61-114	6	12	
Surrogate:											
DCB						*77*	*82*	*35-135*			

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Lab Traveler: 0902-147
Project: 081209

ORGANOCHLORINE
PESTICIDES by EPA 8081A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5 40/50**					
Laboratory ID:	02-147-01					
alpha-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
gamma-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
beta-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
delta-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Heptachlor	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Aldrin	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Heptachlor Epoxide	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
gamma-Chlordane	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
alpha-Chlordane	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
4,4'-DDE	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endosulfan I	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Dieldrin	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endrin	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
4,4'-DDD	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endosulfan II	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
4,4'-DDT	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endrin Aldehyde	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Methoxychlor	**ND**	0.0094	EPA 8081	2-24-09	3-3-09	
Endsulfan Sulfate	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endrin Ketone	**ND**	0.019	EPA 8081	2-24-09	3-3-09	
Toxaphene	**ND**	0.047	EPA 8081	2-24-09	3-3-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*63*	*30-101*				
DCB	*74*	*30-119*				

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Lab Traveler: 0902-147
Project: 081209

ORGANOCHLORINE
PESTICIDES by EPA 8081A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6 45/55**					
Laboratory ID:	02-147-02					
alpha-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
gamma-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
beta-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
delta-BHC	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Heptachlor	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Aldrin	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Heptachlor Epoxide	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
gamma-Chlordane	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
alpha-Chlordane	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
4,4'-DDE	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endosulfan I	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Dieldrin	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endrin	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
4,4'-DDD	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endosulfan II	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
4,4'-DDT	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endrin Aldehyde	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Methoxychlor	**ND**	0.0094	EPA 8081	2-24-09	3-3-09	
Endsulfan Sulfate	**ND**	0.0047	EPA 8081	2-24-09	3-3-09	
Endrin Ketone	**ND**	0.019	EPA 8081	2-24-09	3-3-09	
Toxaphene	**ND**	0.047	EPA 8081	2-24-09	3-3-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*62*	*30-101*				
DCB	*79*	*30-119*				

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Lab Traveler: 0902-147
Project: 081209

ORGANOCHLORINE PESTICIDES by EPA 8081A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0224W1					
alpha-BHC	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
gamma-BHC	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
beta-BHC	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
delta-BHC	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Heptachlor	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Aldrin	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
gamma-Chlordane	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
alpha-Chlordane	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
4,4'-DDE	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Endosulfan I	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Dieldrin	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Endrin	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
4,4'-DDD	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Endosulfan II	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
4,4'-DDT	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Endrin Aldehyde	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Methoxychlor	**ND**	0.010	EPA 8081	2-24-09	2-24-09	
Endsulfan Sulfate	**ND**	0.0050	EPA 8081	2-24-09	2-24-09	
Endrin Ketone	**ND**	0.020	EPA 8081	2-24-09	2-24-09	
Toxaphene	**ND**	0.050	EPA 8081	2-24-09	2-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*64*	*30-101*				
DCB	*78*	*30-119*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0224W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0371**	**0.0365**	0.0500	0.0500	N/A	**74**	**73**	46-90	2	19	
Heptachlor	**0.0362**	**0.0362**	0.0500	0.0500	N/A	**72**	**72**	41-91	0	29	
Aldrin	**0.0340**	**0.0337**	0.0500	0.0500	N/A	**68**	**67**	41-80	1	34	
Dieldrin	**0.102**	**0.104**	0.125	0.125	N/A	**82**	**83**	57-96	2	19	
Endrin	**0.0809**	**0.0821**	0.125	0.125	N/A	**65**	**66**	50-98	1	19	
4,4'-DDT	**0.0995**	**0.0999**	0.125	0.125	N/A	**80**	**80**	53-107	0	18	
Surrogate:											
TCMX						*69*	*70*	*30-101*			
DCB						*83*	*81*	*30-119*			

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664

Date Extracted:	2-24-09
Date Analyzed:	2-24-09
Matrix:	Water
Units:	mg/L (ppm)

Client ID:	**MW-5 40/50**	**MW-6 45/55**
Lab ID:	02-147-01	02-147-02
Hexane Extractable Material:	**ND**	**ND**
PQL:	5.2	5.2

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-24-09
Date Analyzed:	2-24-09
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0224W1
Hexane Extractable Material:	**ND**
PQL:	5.0

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664
SB/SBD QUALITY CONTROL

Date Extracted: 2-24-09
Date Analyzed: 2-24-09

Matrix: Water
Units: mg/L (ppm)

Spike Level: 40 ppm

Lab ID:	SB0224W1	SB0224W1 Dup
Hexane Extractable Material:	**40.0**	**38.9**
PQL:	5.0	5.0
Percent Recovery:	100	97
Control Limits:	91-110	91-110
RPD:	3	
Control Limits:	15	

Flags:

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01
Client ID: MW-5 40/50

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-02
Client ID: MW-6 45/55

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

TOTAL METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0226W1&MB0226W2

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

TOTAL METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	28	

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

TOTAL METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 2-26-09
Date Analyzed: 2-26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**111**	101	**114**	104	3	
Arsenic	110	**114**	104	**117**	106	2	
Beryllium	110	**106**	96	**110**	100	4	
Cadmium	110	**109**	99	**113**	103	4	
Chromium	110	**110**	100	**113**	102	3	
Copper	110	**103**	93	**105**	96	3	
Lead	110	**108**	99	**111**	101	2	
Mercury	12.5	**12.4**	99	**12.4**	99	0	
Nickel	110	**108**	98	**111**	101	3	
Selenium	110	**118**	107	**120**	109	2	
Silver	660	**567**	86	**597**	90	5	
Thallium	110	**108**	98	**110**	100	2	
Zinc	110	**125**	113	**128**	116	3	

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

DISSOLVED METALS
EPA 200.8/7470A

Date Filtered: 2-23-09
Date Analyzed: 2-24&26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01
Client ID: MW-5 40/50

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

DISSOLVED METALS
EPA 200.8/7470A

Date Filtered: 2-23-09
Date Analyzed: 2-24&26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-02
Client ID: MW-6 45/55

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

DISSOLVED METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-23-09
Date Analyzed: 2-24&26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0223D1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

DISSOLVED METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Filtered: 2-23-09
Date Analyzed: 2-24&26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**ND**	**ND**	NA	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	50	

Date of Report: March 3, 2009
Samples Submitted: February 23, 2009
Laboratory Reference: 0902-147
Project: 081209

DISSOLVED METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Filtered: 2-23-09
Date Analyzed: 2-24&26-09

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-147-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	200	**208**	104	**208**	104	0	
Arsenic	200	**212**	106	**211**	105	1	
Beryllium	200	**196**	98	**192**	96	2	
Cadmium	200	**204**	102	**205**	102	0	
Chromium	200	**191**	95	**189**	94	1	
Copper	200	**199**	100	**198**	99	1	
Lead	200	**199**	99	**200**	100	0	
Mercury	12.5	**12.3**	98	**12.5**	100	2	
Nickel	200	**200**	100	**201**	100	1	
Selenium	200	**220**	110	**217**	108	2	
Silver	200	**189**	94	**190**	95	1	
Thallium	200	**203**	102	**201**	100	1	
Zinc	200	**216**	108	**216**	108	0	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Laboratory Number: 02-147

Company	GeoPro Geologic Services LLC
Project Number	081209 (invoice BMEC, Trabusiner)
Project Name	Shaker Square LLC, 2500 Nicolai, Portland, OR
Project Manager	Richard Kent
Sampled by	Richard Kent

Turnaround Request (in working days)

- Same Day
- 1 Day
- 2 Day
- 3 Day
- X Standard (7 working days) (TPH analysis 5 working days)
- (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664 (3)	VPH	EPH	(1)	(2)	(3) DB 2/23		% Moisture
1	MW-5 40/50	2-20-09	1205	W	17		X	X	X			X	X	X				X			X	X	~~X~~		
2	MW-6 45/55	2-20-09	1425	W	17		X	X	X			X	X	X				X			X	X			

	Signature	Company	Date	Time
Relinquished by	Richard C. Kent	GeoPro LLC	2-21-09	1030
Received by	M. Van	OSE	2/23/09	1000
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

(1) total metals include arsenic PP
(2) dissolved metals PP
(3) oil and grease

(2 ice chests)

Chromatograms with final report

DISTRIBUTION LEGEND White - OnSite Copy Yellow - Report Copy Pink - Client Copy

Appendix B
Independent Cleanup Pathway Final Report
2500 NW Nicolai Street, November 2010

INDEPENDENT CLEANUP PATHWAY
FINAL REPORT

Calbag Metals Company Facility

2500 NW Nicolai Street

Portland, Oregon 97210

ECSI No: 5238

November 2010

Prepared for

Shaker Square LLC
P.O. Box 10067
Portland, Oregon 97296-0067

Prepared by

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P. O. Box 26, Battle Ground, WA 98604
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(360) 521-2592

Contents

Figures

Tables

Appendices

1 INTRODUCTION

1.1 Project Background

Shaker Square LLC (Shaker), owners of property at 2500 NW Nicolai Street, Portland, retained Blue Mountain Environmental Consulting Inc. (BMEC) to conduct a site investigation of the property. GeoPro LLC (GeoPro) was subcontracted by BMEC to develop site investigation work plans and conduct an investigation of the soil and groundwater at the 2500 NW Nicolai property (Site). The work began as a voluntary measure by Shaker to investigate the Site. The property owners have since entered into the Department of Environmental Quality (DEQ) Independent Cleanup Pathway (ICP) to complete the Site investigation work.

This report is prepared under the DEQ ICP Report Preparation Guidance (DEQ 2001) and will be submitted to DEQ for evaluation and in support of an anticipated No Further Action (NFA) determination for the Site.

1.2 Purpose and Objectives

This work has been performed to determine whether contaminants, primarily metals, have impacted shallow soil and groundwater beneath the Site. The following are specific investigation objectives:

1. Conduct a site investigation to generate soil and groundwater data of sufficient quality to evaluate nature and extent of potential contamination in soil and groundwater beneath the Site.
2. Determine flow direction for shallow groundwater beneath the Site.
3. Prepare a report to summarize all investigation results, and present conclusions and recommendations, to request a NFA determination for the Site.

2 SITE BACKGROUND

The following sections provide a complete description of the Site including location, ownership and operating history.

2.1 Site Location

The Site is located at 2500 NW Nicolai Street, Portland, Oregon (see Figure 1). The Site consists of tax lots 1 through 6, Block 3 of the Versteegs Addition, in Multnomah County, Oregon, and is located in T1N, R1E, Section 28, east of the Willamette Meridian. The Site is at latitude 45° 32’ 33.72” north and longitude 122° 41’ 26.51” west.

2.2 Site Description

The Site consists of 0.9 acres of land developed with one industrial warehouse building, and 0.23 acres of undeveloped land. Ground cover consists primarily of the building and asphalt paving along the eastern margin of the property. The Site can be accessed from the north via an entrance from NW Nicolai Street.

The property is used as a metal recycling facility with all recycling activities conducted within the warehouse. The 30,000 square-foot building consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof.

There are no waste disposal or treatment areas or dry wells on the Site. Waste storage areas are limited to waste oil stored in 55-gallon drums in a metal storage shed on the east side of the warehouse, and coolant stored in an onsite evaporator or in totes. Waste oil is generated through the recycling process and properly disposed offsite, and coolant is used in the onsite evaporator and properly disposed offsite as necessary.

2.3 Site History and Facility Operations

A complete summary of information regarding the Site was prepared in response to a U.S. Environmental Protection Agency (EPA) CERCLA Section 104(e) information request. This information request was made of a number of properties that are adjacent to the Portland Harbor Superfund Site. The report "Responses to U.S. EPA CERCLA Section 104(e) Information Request", dated July 2008, was submitted to EPA and DEQ, is referenced herein, and included on CD in Appendix A of this report. A Phase I Environmental Assessment was also prepared for the Site, dated August 2008.

2.3.1 Ownership History

Based upon data in the July 2008 response report, the property at 2500 NW Nicolai Street, Portland, was purchased in 1960 by Calbag Metals Company and continues under the same ownership to the present. No information was identified regarding any prior ownership of the Site.

2.3.2 Operating History

The Site is operated by Calbag Metals Company (Calbag), a nonferrous scrap metal company which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals include primarily aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Intake is at loading docks on the east side of the warehouse and presorting occurs under a developed guidelines. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or PCBs. Fabrication does not occur at the Site.

Historical records indicate the building on the Site was constructed on undeveloped land in 1949, and has been in use since that time. A Sanborn map dated 1969 describes the occupant of the building as "Junk Warehouse". Additional site history is described in the July and August 2008 reports. Calbag has operated at the Site since 1960.

2.4 Regulatory History

The Site is located in the industrial area of northwest Portland. Adjacent industrial properties are shown on Figure 3. The Site collects and manages stormwater under a current 1200-Z General Stormwater Permit regulated by DEQ. The site voluntary investigation initiated by Calbag will be completed under the DEQ ICP program with the anticipated outcome of a NFA determination. The Site is listed on the DEQ Environmental Cleanup Site Information (ECSI) database as ECSI site #5238.

No other environmental or DEQ-regulated activities have occurred at the Site.

2.5 Previous Investigations

2.5.1 EPA Section 104(e) Response Report

A report was prepared for the Site by Blue Mountain Environmental Consulting ("BMEC") through response to the EPA Section 104(e) information request. The summary report, dated July

2008, is included in Appendix A of this report. The July 2008 report provides detailed information about Site ownership, operation, environmental conditions, regulatory history and Site setting.

2.5.2 Phase I Environmental Assessment

The Phase I report identified recognized environmental conditions in connection with the Site and concluded that an “investigation should be conducted to investigate soil conditions at the site.”

2.5.3 Soil and Groundwater Investigation

An investigation of soil and groundwater was conducted between October 2008 and January 2009. The purpose of the investigation was to evaluate the potential for soil and shallow groundwater beneath the Site to be impacted by Site operations, primarily by metals and petroleum hydrocarbons, and to determine the direction of shallow groundwater flow.

MW-4 was installed in October 2008. In January 2009 three soil borings, numbered B-7 through B-9, were drilled and sampled for soil analysis. Two shallow groundwater monitoring wells were installed in January 2009; wells MW-5 and MW-6 were installed in the boreholes for B-8 and B-9, respectively. The location of the borings and wells are shown on the map of Figure 4. Borings B-7 and B-9/MW-6 were completed inside of the existing warehouse, and B-8/MW-5 and MW-4 were completed in the asphalt paved area east of the warehouse. Soil samples were collected in the borings at the time of drilling, and initial groundwater level and samples were collected in November 2008 and February 2009.

Field methods and investigation findings are described in the “Environmental Site Assessment Subsurface Calbag Facility” report, dated May 2009 and included in Appendix B (on CD) of this report. The results of the soil and groundwater investigation are discussed in detail in Section 5.

2.5.4 Groundwater Investigation

A second groundwater monitoring event was conducted during March 2010 that included measuring water levels and collecting groundwater samples from the three onsite monitor wells. A summary report, “Groundwater Monitoring Report Calbag Facility”, dated May 2010, was prepared to summarize all groundwater data for the site. The groundwater report is included in this report as Appendix C; the report has not previously been submitted to DEQ. The results of the groundwater investigation are discussed in detail in Section 5.

3 ENVIRONMENTAL SETTING

3.1 Climate Information

The average annual rainfall for Portland Oregon is 40.2 inches per year with maximum monthly rainfall typically between November and March. The average annual temperature is 53.1°F with the highest monthly temperatures above 60°F between June and September and the lowest monthly temperatures below 50°F between November and March. The dominant wind direction as measured at the Portland airport (2001 through 2010) is north-northwest with wind velocities averaging from 7 to 10 miles per hour with the highest wind velocities during the fall and winter months.

3.2 Topography

The ground surface elevation at the Site is approximately 65 to 68 feet above mean sea level. The ground surface at the site slopes gradually to the northeast.

3.3 Surface Water Hydrology

There are no surface water bodies on or adjacent to the Site. The nearest surface water body is the Willamette River, flowing northward approximately ½ mile east of the Site.

Stormwater for the Site is collected and managed under a 1200-Z General Permit effective as of February 1, 2007 through June 30, 2012 (DEQ file #DRR60710). Stormwater flows from roof drains to catch basins located at the north end of the property, in NW Nicolai Street, and to the south in the paved area between Calbag and ESCO to the east. The catch basins drain to a City of Portland storm water line that flows west to east along NW Nicolai Street (see Appendix 3 of the EPA Section 104(e) Response, July 2008; Appendix A in this report) and ultimately discharges to the Willamette River.

3.4 Regional and Site Geology and Soil

The Site is located on a geomorphic terrace situated along the western margin of the Willamette River, and at the base of the Tualatin Mountains to the west. The terrace is underlain by younger Quaternary sedimentary flood deposits of the Willamette River and at depth by Pleistocene-age fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). In some areas, artificial fill occurs at the surface of the terrace, consisting of various gravel, debris, sawdust and mill ends that were deposited as part of the industrial development of the northwest Portland industrial district.

The Site is underlain mainly by Pleistocene flood deposits with a thin veneer of artificial fill at ground surface. Investigations at the Site encountered about 1 foot of artificial fill, overlying clayey silt to about 12 feet, and below 12 feet depth encountered silty sand with lenses of pebbly gravel.

3.5 Hydrogeology

Shallow groundwater is present beneath the Site area at a depth below ground surface of about 45 to 50 feet. General groundwater flow is northerly, consistent with the Site's location in a flood plain terrace adjacent to a northerly flowing Willamette River. Groundwater flowing from beneath the Site is presumed to discharge to the Willamette River at some point downgradient from the Site. Only groundwater in the upper 60 feet of the subsurface beneath the Site was investigated. No wells were identified within ¼ mile of the Site in a survey of the Oregon Water Resources Department website and reported in the Phase I report.

4 LAND AND WATER USE DETERMINATION

4.1 Water Use Determination

A water use survey was conducted as part of the response to the EPA Section 104(e) information request (see Appendix 5 Regulatory Information). A search was made for a 1-mile radius of the Site. No municipal or residential water supply wells, or other wells such as industrial supply wells, were identified within ¼ mile of the Site. Other wells identified at greater than ¼ mile from the site include monitor wells and industrial use wells.

The City of Portland Water Bureau provides water supply to property owners in the area of the Site with no restriction on use of potable water for industrial uses. No water supply wells are located on the Site. The property owner, Calbag, does not currently use groundwater beneath the Site for any purpose, nor does it have plans for using groundwater in the foreseeable future.

Groundwater beneath the property would be expected to move consistent with regional groundwater flow and ultimately discharge to the Willamette River at some distance to the north or northwest downgradient from the Site. In this regard, groundwater from beneath the site may have a potential beneficial use of discharge to surface water and support of aquatic habitat. However, the site is located about ½ mile west of the western margin of the Willamette River, and the flow path from beneath the site to some discharge point at the Willamette River may be more than ½ mile. Significant attenuation of any potential contamination in groundwater beneath the site may occur as a result of dilution through groundwater movement in the aquifer, degradation and interaction with aquifer materials, and infiltration of rainfall in downgradient areas.

While groundwater in the area of the site (greater than ¼ mile from the Site) may be used for industrial purposes, no beneficial uses are identified for groundwater beneath the Site except for potential discharge to surface water at the Willamette River.

4.2 Land Use Determination

The Site is zoned industrial general use (IG) and is located within an industrial area designated as a heavy industry sanctuary. The Site is currently industrial use, and is expected to remain general industrial land use for the foreseeable future.

5 SITE SOIL AND GROUNDWATER INVESTIGATION

Borings completed to collect only soil samples are numbered B-7 through B-9. Groundwater monitoring wells are numbered MW-4 through MW-6. The drilling locations are shown in Figure 4.

Two rounds of groundwater sampling were conducted; in November 2008 (MW-4) and February 2009 (MW-5 and MW-6), and all wells in March 2010. Results of the soil and groundwater investigation are reported in the May 2009 subsurface investigation report (Appendix B) and are discussed in the following sections.

5.1 Soil Results

Metals and petroleum hydrocarbons are the main chemicals of interest based on the operations of the facility. Hazardous substances previously detected at the nearby Guilds Lake Remediation Project and in other offsite property investigations in the Site vicinity include PCBs, pesticides, general petroleum, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples were analyzed for metals and petroleum hydrocarbons, and at least constituents detected in the vicinity.

Maximum soil concentrations are summarized in Table 1 Detected Concentrations of Chemical in Soil. Analytical results for soil were compared to DEQ's risk-based concentrations (RBCs) for industrial land use exposures (DEQ 2003).

Table 1 – Detected Concentrations of Chemicals in Soil

CHEMICALS	SAMPLES		DEQ RISK-BASED CONCENTRATIONS		
	Sample Number	Maximum Concentration	Occupational Worker	Construction Worker	Excavation Worker
Concentrations in mg/kg					
Arsenic	MW4-S-6	<14	1.7	13	370
Barium	B7-S-03	250		62000	
Chromium Total	B8-4	26	180	920	26000
Lead Total	B9-S-03	67	800	800	800
Concentrations in ug/kg					
Acenaphthylene	B7-S-03	130		19000	
Anthracene	B7-S-03	120		93000	
Benzo(a)anthracene	B7-S-03	270	2.7	21	590
Benzo(b)fluoranthene	B7-S-03	1400	2.7	21	590
Benzo(k)fluoranthene	B7-S-03	640	27	210	5900
Benzo(g,h,i)perylene	B7-S-03	2500			
Benzo(a)pyrene	B7-S-03	640	0.27	2.1	59
Chrysene	B7-S-03	480	270	2100	59000
Dibenz(a,h)anthracene	B7-S-03	620	0.27	2.1	59
Fluoranthene	B7-S-03	550	29000	8900	
Fluorene	B7-S-03	16	41000	12000	
Ideno(1,2,3-c,d)pyrene	B7-S-03	1600	2.7	21	590
1-Methylnaphthalene	B7-S-03	10			
2-Methylnaphthalene	B7-S-03	15			
Naphthalene	B7-S-03	31	23	580	16000
Phenanthrene	B7-S-03	260			
Pyrene	B7-S-03	530	21000	6700	

Notes:
1. Maximum concentrations detected from all soil samples. See Figure 4 (Independent Cleanup Pathway Report, November 2010) for sample locations.
2. Risk-Based Concentrations (RBCs) from DEQ Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September, 22, 2003.
3. Yellow shaded cell indicates maximum soil concentration exceeds an RBC for at least one exposure pathway.
4. Gray shaded cell indicates exposure pathway exceeded by maximum soil concentration.
5. Blank cell indicates no RBC for that chemical for that pathway, or that the RBC exceed the solubility limit for that chemical.

5.1.1 Metals

Metals, including arsenic, barium, cadmium, total chromium, lead, mercury, selenium and silver, were analyzed for all soil samples. Metals that were not detected include arsenic (at detection limits (DL) less than 14 milligrams per kilogram (mg/kg)), cadmium (DL less than 0.69

mg/kg), mercury (DL less than 0.35 mg/kg), selenium (DL less than 14 mg/kg) and silver (DL less than 0.69 mg/kg).

Metals detected at elevated concentrations include barium at up to 270 mg/kg, total chromium at up to 26 mg/kg, and lead at up to 67 mg/kg. None of the metals were detected at concentrations that exceed DEQ RBCs.

5.1.2 Polychlorinated Biphenyls (PCBs)

PCBs were analyzed using EPA Method 8082 for Aroclors. No Aroclors were detected in any soil samples from any of the borings. The DLs were below the DEQ RBCs.

5.1.3 Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs were analyzed using EPA Method 8270D/SIM. In general, PAHs were not detected in the soil samples and at DLs that were below the respective DEQ RBCs. The exceptions include boring B-7 at 3 feet depth and boring B-9 at 3 feet depth.

In boring B-7, sample S-03, several PAHs were detected at elevated concentrations, with several that exceed their DEQ RBCs.

In boring B-9, sample S-03, fluoranthene, pyrene, benzo(a)fluoranthene, and benzo(a)pyrene were detected at concentrations slightly above their DLs.

Only indeno(1,2,3-c,d)pyrene and benzo(g,h.i)perylene exceeded their screening levels by one order of magnitude in one soil sample. Benzo(b)fluoranthene and benzo(a)pyrene exceeded their RBCs at 9.1 ug/kg versus 2.7 ug/kg and 8.1 ug/kg versus 0.27 ug/kg, respectively.

5.1.4 Petroleum Hydrocarbons

Soil samples were analyzed for petroleum hydrocarbons, including diesel, lube oil and gasoline, and were not detected at DLs well below any available screening criteria.

5.2 Groundwater Results

Three groundwater monitor wells were installed on the Site. The wells consist of polyvinyl chloride casing with a machine-slotted 10-foot screened interval placed within the upper 10 feet of the shallow groundwater table. A lockable water tight well cover was installed on each well casing and a vault traffic box was cemented around the well at the surface. The monitor well locations and elevations were surveyed accurate.

5.2.1 Groundwater Gradients

Static water levels were measured in each monitor well prior to sampling groundwater as described in the May 2009 investigation report. Groundwater sampling in each monitor well was conducted using low-flow purging and sampling techniques. Groundwater sampling was conducted in November 2008 and February 2009, shortly after installation of the wells, and again in March 2010. The following Table 2 summarizes the well construction data and water level measurements for the two monitoring events.

Table 2 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-4	65.357	65.118	690469.698	7637709.180	55	45/55	2/20/09	48.69	16.43
							3/30/10	50.52	14.6
MW-5	64.22	64.02	690697.319	7637695.231	50	40/50	2/20/09	47.71	16.31
							3/22/10	49.57	14.45
MW-6	67.17	66.95	690566.067	7637672.419	55	45/55	2/20/09	50.58	16.37
							3/22/10	52.43	14.52

Notes:
Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Well MW-4 installed November 1, 2008; MW-5 and MW-6 installed January 31, 2009.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008 and March 3, 2009.
Data table from "Environmental Site Assessment, Calbag Facility", May 2009.

The groundwater gradient is essentially flat. Based on 2008/2009 and 2010 water level measurements, the groundwater flow direction is west-northwest, in the general downstream flow direction of the Willamette River. The flow gradient map of Figure 5 for March 2010 is typical of groundwater flow beneath the site. The shallow groundwater flow direction may be influenced by differences in permeability between the Pleistocene flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. However, groundwater flow directions are consistent with the location of the site and expectations for area or regional groundwater flow within the Willamette River terrace and flood plain.

5.2.2 Groundwater Sampling

Groundwater samples were collected in November 2008 and February 2009, shortly after well installation, and again in March 2010. Results of the analyses for the groundwater samples are presented in detail in the May 2009 subsurface report (see Appendix B). Maximum concentrations of chemicals detected in groundwater are summarized in Table 3 Detected Concentrations of Chemicals in Groundwater. Maximum concentrations were compared to DEQ screening levels (SLVs) for freshwater aquatic receptors.

Table 3 – Detected Concentrations of Chemicals in Groundwater

CHEMICAL	SAMPLE LOCATION	MAXIMUM CONCENTRATION	DEQ AQUATIC SLV
Concentrations in ug/l			
Arsenic	MW-4	6.2	150
Chromium	MW-4	24	11
Copper	MW-4	28	9
Lead	MW-4	9.7	2.5
Nickel	MW-4	25	52
Zinc	MW-4	160	120
Carbon Tetrachloride	MW-6	0.35	74
Chloroform	MW-5	3.2	1240
o-Xylene	MW-6	0.22	
Tetrachloroethene	MW-4	0.3	840

Notes:
1. Maximum concentration detected from all groundwater samples. See Figure 4 (Independent Cleanup Pathway Report, November 2010) for sample locations.
2. Aquatic freshwater screening level values (SLVs) from DEQ Guidance for Ecological Risk Assessment: Levels I, II, III, IV, Final, April 1998.
3. Yellow shaded cell indicates maximum soil concentration exceeds its SLV.
4. Blank cell indicates no SLV for that chemical for aquatic receptors.

5.2.2.1 Total and Dissolved Metals

All 2008 and 2009 groundwater samples were analyzed for total and dissolved metals, and the March 2010 samples were analyzed only for total metals. In general, metals were not detected in groundwater except for one sample. DLs for beryllium, cadmium, copper, selenium and silver were up to two times higher than their SLVs. Even though DLs for many metals were higher than their DEQ SLV, none of the metals were detected in soil at elevated concentrations and that might serve as a source for groundwater contamination.

The exception is the water sample obtained from MW-4 in March 2010 where total metals, including arsenic, chromium, copper, lead, nickel and zinc, were detected at elevated concentrations (see Table 3). Only chromium, copper, lead and zinc were detected at concentrations up to two times their SLVs. These detected concentrations may not be representative of dissolved values as the samples, because they are total analyses or unfiltered, may include entrained sediment particles. Because of the distance between the Site and the river, migration of any contaminants in groundwater would undergo significant attenuation.

5.2.2.2 Polychlorinated Biphenyls (PCBs)

PCBs were analyzed using EPA Method 8082 for aroclors. Aroclors were not detected in any groundwater sample at concentrations above a DL of 0.047 ug/l which is below the DEQ SLVs for all aroclors except aroclor 1254, and then only slightly above.

5.2.2.3 Organochlorine Pesticides

Organochlorine pesticides were not detected in any groundwater sample at DLs ranging between 0.019 to 0.0094 ug/l. These DLs were generally below the DEQ SLVs, although for some pesticides the screening criteria are in the parts per trillion.

5.2.2.4 Volatile Organic Chemicals (VOCs)

Four VOCs were detected, including carbon tetrachloride, chloroform, o-xylene and tetrachloroethene, but not above DEQ SLVs. No other VOCs were detected in any groundwater samples above DLs that were below the DEQ SLVs.

Carbon tetrachloride, chloroform, o-xylene and tetrachloroethene (PCE) were detected at very low concentrations. Carbon tetrachloride was detected once in MW-6 at 0.35 ug/l. Chloroform was detected in the November 2008 sample obtained from MW-4 and the March 2010 sample obtained from MW-5, at concentrations of 1.2 and 3.2 ug/l. Carbon tetrachloride, chloroform and PCE are not identified as used on the Site. Carbon tetrachloride and chloroform may represent laboratory contaminants and chloroform perhaps a relic of water supply treatment. PCE was detected at a higher concentration at the upgradient southern boundary of the site (MW-4 location) and, along with the other detected VOCs, was not detected in onsite soil samples.

5.2.2.5 Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs were not detected in any groundwater sample at DLs that are well below the respective DEQ SLVs.

5.2.2.6 Petroleum Hydrocarbons

Petroleum hydrocarbons, including diesel, lube oil and gasoline, were not detected in groundwater samples at concentrations above their DLs of 250 ug/l, 400 ug/l and 100 ug/l, respectively. No DEQ SLVs are available for these chemicals.

6 SOURCES, NATURE AND EXTENT OF CONTAMINATION

6.1 Potential Source(s) of Contamination

Based upon the history of operations at the site, the only potential sources of contamination identified may be management of scrap metals recycling that occurs primarily within the Site warehouse, waste oils generated through the recycling process, and other miscellaneous vehicular traffic in the paved areas adjacent to the warehouse. No manufacturing process, waste treatment or other processes associated with wastes are conducted at the Site.

6.2 Nature and Extent of Contamination

No evidence was identified through the EPA 104(e) response, Phase I ESA, or through operations knowledge of the property owner, to indicate that any significant contamination is present in soil or groundwater beneath the Site.

Contaminants that were evaluated in the soil and groundwater investigation included metals and petroleum hydrocarbons, based on the historical metals recycling operations at the site. Additional chemicals evaluated, based on results of other offsite investigations in the area of the Site, include PCBs, pesticides, VOCs and PAHs.

Based on the results of the soil and groundwater investigation, some chemicals are detected in soil and groundwater at low concentrations in limited areas and in some cases above the DEQ screening criteria.

6.2.1 Soil

Contaminants detected in soil beneath the Site include two metals and several PAHs. These chemicals were detected in boring B-7, in the sample from 3 feet depth, and to a lesser degree in boring B-9, also in the sample from 3 feet depth. Several PAHs detected in boring B-7 exceed their DEQ RBCs and two PAHs detected in boring B-9 exceed their RBCs. As shown on Figure 4, these borings are located beneath the warehouse floor slab where soil is currently inaccessible to onsite workers. The location of the detected chemicals is close beneath the floor slab of the warehouse therefore infiltration of surface water or stormwater is essentially precluded because of the presence of the large warehouse.

PAHs are typically considered relatively insoluble and of low mobility in groundwater. If present in groundwater PAHs would not be expected to move a significant distance with groundwater because of their tendency to sorb to soil particles. Because of their low solubility and low mobility, the PAHs beneath the warehouse floor slab would not be expected to leach to groundwater at greater than approximately 45 feet below ground surface.

6.2.2 Groundwater

Contaminants detected in groundwater beneath the Site that exceed DEQ SLVs include metals (chromium, copper, lead, and zinc), and VOCs (carbon tetrachloride, chloroform, o-xylene and PCE) that were detected in groundwater but not above their DEQ SLVs. These contaminants were detected at very low concentrations in limited samples and are not interpreted to represent larger scale contamination of groundwater beneath the Site.

Metals that exceed DEQ SLVs were detected only in the sample collected from MW-4 in March 2010 and analyzed for total metals. As a total metals analysis, the results may not be representative of dissolved groundwater conditions. All other sample analyses showed non-detect for total and dissolved metals.

7 EXPOSURE PATHWAY SUMMARY

An exposure assessment was conducted for the Site based on the identified land and water use, results of the soil and groundwater investigation and evaluation of potential contaminant sources, fate and transport of detected chemicals, exposure points and receptors. The following sections summarize the Site exposure assessment.

7.1 Locality of the Facility

A key step in an exposure assessment is to determine the locality of the facility which is any point where a human or ecological receptor will or is likely to come into contact with facility-related contamination. Based on the results of the soil and groundwater investigation, the presence of contamination is limited to within the Site property boundaries. Shallow groundwater flows beneath the Site to the north-northwest. No contaminants were detected in groundwater at or beyond the downgradient property boundary at concentrations that exceed DEQ SLVs. In addition, contaminants detected in groundwater are limited in area, of low concentrations, and for the most part are considered to be of low mobility (PAHs). Therefore, the locality of the facility is determined to be the Site property boundaries.

7.2 Conceptual Site Model

The Site is designated a general industrial property and is expected to remain industrial for the foreseeable future. The property is covered either by the large warehouse or is paved with asphalt. Metals recycling operations occur within a large warehouse building onsite. Low concentrations of some contaminants (metals, PAHs and VOCs) were detected in limited areas of the Site, primarily beneath the warehouse floor slab for metals and PAHs in soil, and in the southern portion of the site for metals and VOCs in groundwater.

Potential human receptors that could be exposed to soil contamination onsite include occupational workers that carry out recycling operations, or construction workers that may carry out building repair or construction of future building foundations onsite, or excavation workers that may install or repair utilities onsite. Occupational workers could be exposed to contaminants in indoor air where VOCs or other volatile chemicals are present in soil or groundwater near to or beneath a building occupied by workers.

No surface water is present on or near the Site, and there is no current use of groundwater onsite, so occupational workers would not be exposed to contaminants in groundwater. The depth to groundwater beneath the site is greater than 45 feet below ground surface so excavation or construction workers are not likely to encounter groundwater during any work requiring excavation of soil and therefore would not be exposed to contaminants in groundwater.

Ecological receptors may include birds, terrestrial receptors or plants that inhabit or make up ecological habitat on a site. No surface water is present onsite and no soil is exposed. While some receptors my contact soil through burrowing below ground surface, it is not likely that will occur at the Site because no soil is exposed and the site is a paved active industrial facility with frequent heavy equipment movement in the only open but paved area east of the warehouse.

7.3 Exposure Pathway Analysis

7.3.1 Occupational Worker

Occupational workers may be exposed to contaminants present soil in areas of the Site that are not paved. PAHs exceeding DEQ RBCs for occupational workers are present in limited areas beneath the warehouse floor slab. In their present location, they are not expected to present a threat to onsite workers or to groundwater through leaching and downward vertical migration.

7.3.2 Construction Worker

Construction workers may be exposed to contamination in soil if future construction requires excavation below ground surface. PAHs that exceed DEQ RBCs for construction workers are present in a limited area beneath the warehouse floor slab. These chemicals may pose a threat to future construction workers but because of their limited area they are not considered a significant threat.

7.3.3 Excavation Worker

Excavation workers may be exposed to contaminated soil during excavation for utility installation or repair. Repair or installation of utilities may occur but the current location of the PAHs that exceed DEQ RBCs for excavation workers is beneath the warehouse floor slab and is limited in area therefore not considered a significant threat.

7.3.4 Indoor Air Exposure

Four VOCs were detected in groundwater but at concentrations that are well below their DEQ indoor or outdoor screening levels (320 ug/l for carbon tetrachloride, 1,200 ug/l for chloroform, greater than the solubility limit for o-xylene, and 1,400 ug/l for PCE). Therefore this exposure pathway is not considered complete for the Site.

7.3.5 Ecological Receptors

Potential ecological receptor exposure was evaluated through Ecological Risk Assessment Level I Scoping. The results of this evaluation, including completion of the Level I Scoping Attachment 1, 2, and 3 (see Appendix D).

The results of the Level I Scoping indicate that exposure to onsite soil by ecological receptors is not likely to occur because the Site is completely covered by the existing building, pavement, or adjacent and co-joined buildings. And, there is no habitat onsite to support significant ecological species.

Groundwater that flows beneath the site may discharge to the Willamette River at some downgradient point (likely more than ½ miles from the Site) but because of low likelihood for chemicals in soil leaching to groundwater, low solubility and low mobility for chemicals detected in soil, and attenuation over the flow distance to the river, chemicals would not be expected to reach the Willamette River via groundwater flow at concentrations that would pose a threat to aquatic receptors.

8 RISK EVALUATION

8.1 Risk Characterization

Part of the site investigation and risk evaluation is to determine the current and reasonably likely future land and water uses and locality of the facility. The current and future Site land use is industrial, and beneficial use for shallow groundwater beneath the Site is potentially discharge to surface water of the Willamette River; drinking water is not an indentified beneficial use of the shallow groundwater.

Contamination was detected in soil and groundwater beneath the Site but at low concentrations and in limited areas. Soil contamination (metals and PAHs) is present in a limited area beneath the warehouse floor slab and is not currently accessible for exposure by occupational workers. Future utility installation or repair or construction of building foundations onsite may result in exposure to contamination in soil by construction or excavation workers but because of the low concentrations and limited area is not considered a significant threat. Contamination in soil is not likely to leach into underlying groundwater since infiltration of surface water or stormwater will be precluded because of the presence of the building.

Groundwater contamination (total metals and two VOCs) was detected at very low concentrations in limited areas, and not at or beyond the limits of the Site property boundaries. No significant soil sources of contamination for groundwater have been identified; either for contaminants present in groundwater or that may leach from soil to groundwater in the future. The depth to groundwater beneath the Site is well below typical depths for utility work or foundation construction so neither construction nor excavation workers would be expected to be exposed to the low concentrations of contaminants in groundwater.

8.2 Ecological Receptors

The Site is an active industrial property, located within an area of dense industrial development. The Site has essentially no developed landscaping or other vegetation that would be capable of support of birds or terrestrial receptors (see Appendix D). Other industrial properties in the vicinity of the Site have little or no vegetation that would constitute ecological habitat. In addition, contamination in soil is not accessible to ecological receptors because it is beneath the warehouse floor slab and is expected to remain so for the foreseeable future. Under the current and future industrial land use and no suitable habitat, birds and terrestrial receptors are not likely to be exposed to contaminants present in soil and groundwater beneath the Site.

9 CONCLUSIONS

The following are conclusions based on the results of the soil and groundwater investigation, evaluation of sample analytical data, and risk evaluation for human and ecological receptors.

- The soil and groundwater investigation was initiated subsequent to response to a EPA CERCLA Section 104(e) information request and intended to voluntarily characterize potential contamination of soil and groundwater beneath the Site.
- Land use for the Site is currently general industrial (IG) and is expected to remain industrial for the foreseeable future.
- Shallow groundwater beneath the Site has a potential beneficial use of discharge to surface water; drinking water is not an identified beneficial use of the shallow groundwater.
- The locality of the facility is determined to be the Site property boundaries.
- Contaminants evaluated for Site soil and groundwater included metals, PCBs, pesticides, VOCs, PAHs, and petroleum hydrocarbons based upon historic Site operations and results of offsite property investigations in the vicinity of the Site.
- Soil and groundwater analytical results were compared to DEQ RBCs for industrial land use including occupational, construction and excavation workers (soil) and DEQ SLVs for freshwater aquatic receptors (groundwater).
- Soil contamination consists of several PAHs that exceed screening criteria but are limited to areas located beneath the onsite warehouse floor slab.
- Groundwater contamination that exceed DEQ SLVs includes metals (total concentrations of chromium, copper, lead, and zinc) in the upgradient-most monitor well MW-4, and four VOCs (carbon tetrachloride, chloroform, o-xylene and PCE) detected at low concentrations in each of the wells.
- No significant soil sources of contamination to groundwater were identified either for contaminants that were detected in groundwater, or for future leaching of other constituents from soil to groundwater.
- Limited soil contamination located beneath the warehouse floor slab (PAHs) is not expected to leach to groundwater because of their low concentration, low solubility and mobility, tendency to sorb to soil, and elimination of infiltration of surface water or stormwater because of the warehouse floor slab.
- Groundwater contamination was detected at low concentrations and within the Site boundaries and is not expected to migrate offsite or to the Willamette River at concentrations that pose a threat to aquatic receptors because of attenuation over the transport distance to the river, and tendency to sorb to soil particles.
- Occupational and excavation workers are not likely to be exposed to contamination in soil because it is located beneath the warehouse floor slab. Future excavation and construction workers may be exposed to contamination in soil but the exposure risk would not be considered significant because the contaminant concentrations in soil are relatively low and limited in area.
- Ecological receptors, including birds and terrestrial receptors, are not likely to be exposed to contamination in soil because there is no viable habitat on the Site, the

entire Site is covered by the warehouse or asphalt pavement and no contaminated soil is exposed.

10 RECOMMENDATIONS

The following are recommendations based upon the results of the investigation and evaluations presented in this report.

- A No Further Action determination would be appropriate for this Site because the low concentrations and limited occurrence of contamination in soil and groundwater beneath the Site does not pose a significant risk to human or ecological receptors.
- Submittal of this report to DEQ along with a request for a NFA for the Site.

11 REFERENCES

Oregon Department of Environmental Quality, 1998, “Guidance for Ecological Risk Assessment: Levels I, II, III, IV”, Final, April 1998.

Oregon Department of Environmental Quality, 1998, “Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites”, Final, July 1, 1998.

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Blue Mountain Environmental Consulting, 2008, “Responses to U.S. EPA CERCLA Section 104(e) Information Request”, Calbag Metals 2500 NW Nicolai Street, Portland, Oregon, July 2008.

BMEC, 2008, “Phase I Environmental Site Assessment Report”, Calbag Metals, 2500 NW Nicolai St., Portland, OR, August 29, 2008.

GeoPro Geologic Services LLC, 2009, “Environmental Site Assessment Subsurface”, Calbag Facility, 2500 NW Nicolai Street, Portland, Oregon, May 2009.

GeoPro Geologic Services LLC, 2010, “Groundwater Monitoring Report”, Calbag Facility, 2500 NW Nicolai Street, Portland, Oregon, May 2010.

12 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for unauthorized editing, detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk. Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions by others or of previous work.

Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. Executive Summaries are not included in reports because it has been determined that decisions have been made based on the summarized findings in Executive Summaries without reading the report in entirety. This warranty is in lieu of all other warranties, either expressed or implied.

It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Landowner and Client understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. Consultant is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities.

In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services for the Client may or may not be disclosed in this report.

Richard C. Kent, R.G.

GeoPro LLC

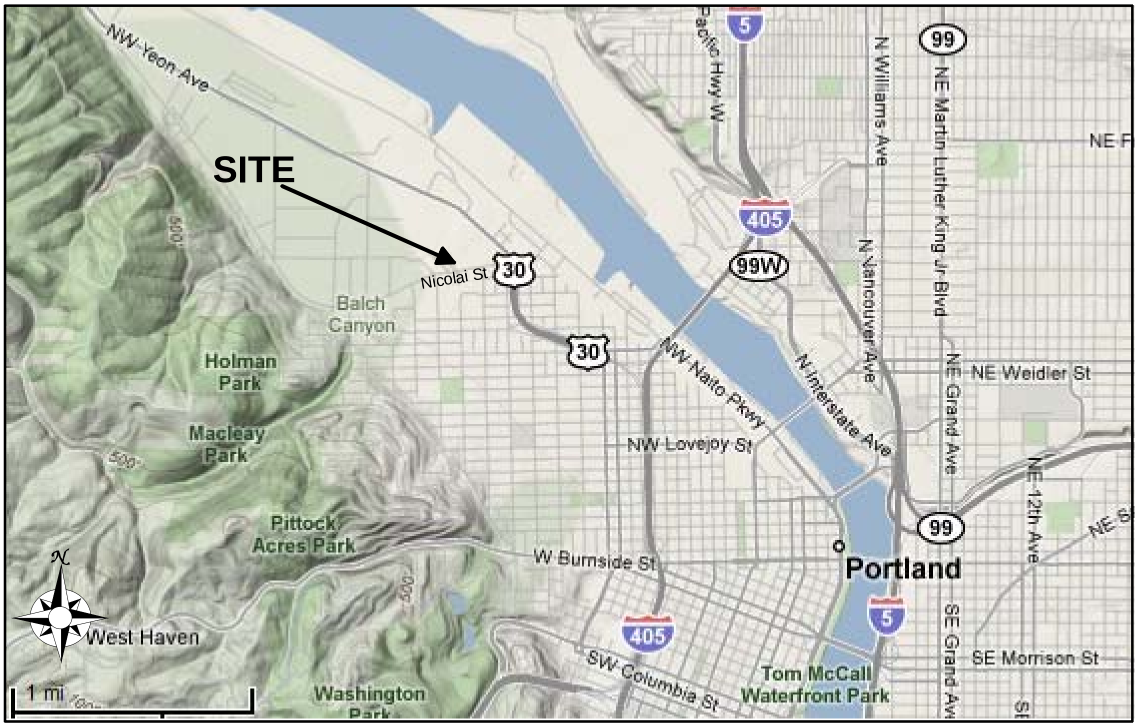
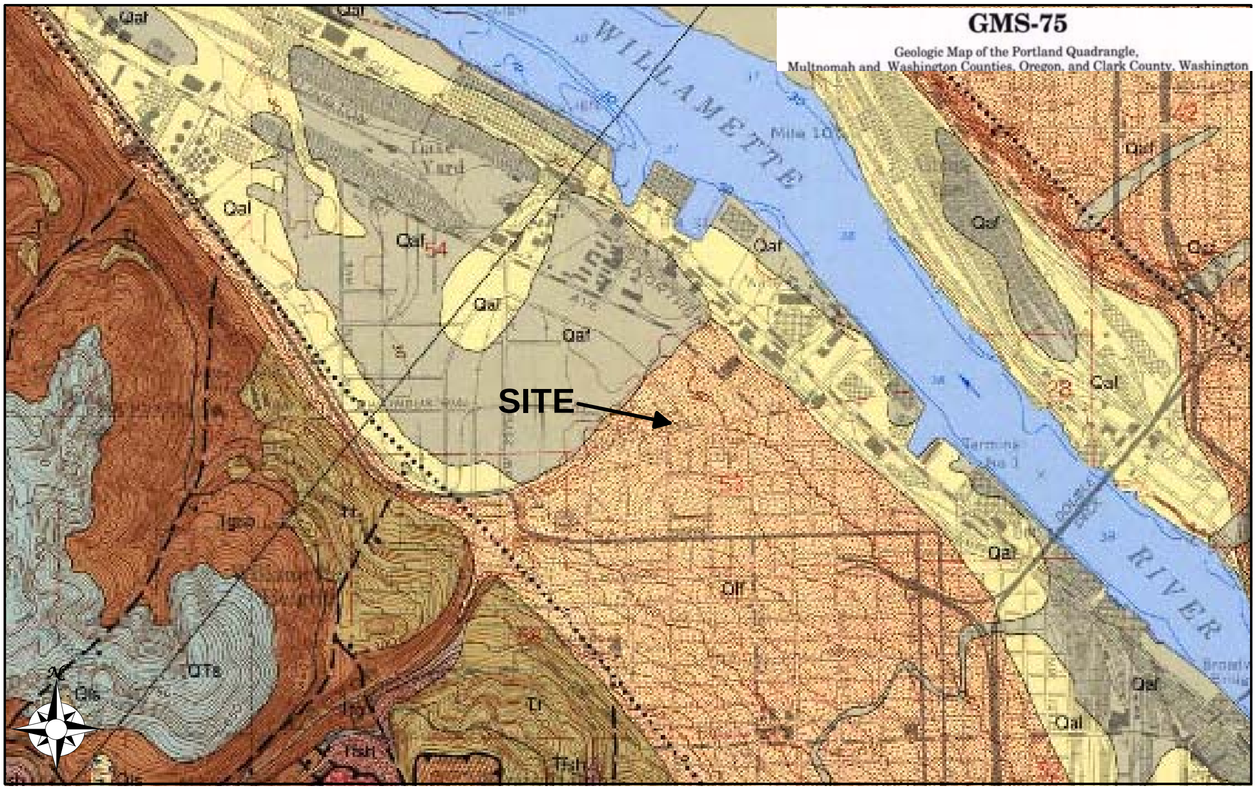


Figure 1 – Location Map, Portland, Oregon



Legend

Qaf — **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal — **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff — **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 2 – Geology Map, Northwest Portland, Oregon

Guilds Lake Remediation Project

Figure 3 – Adjacent Properties, NW Nicolai St., Portland, Oregon

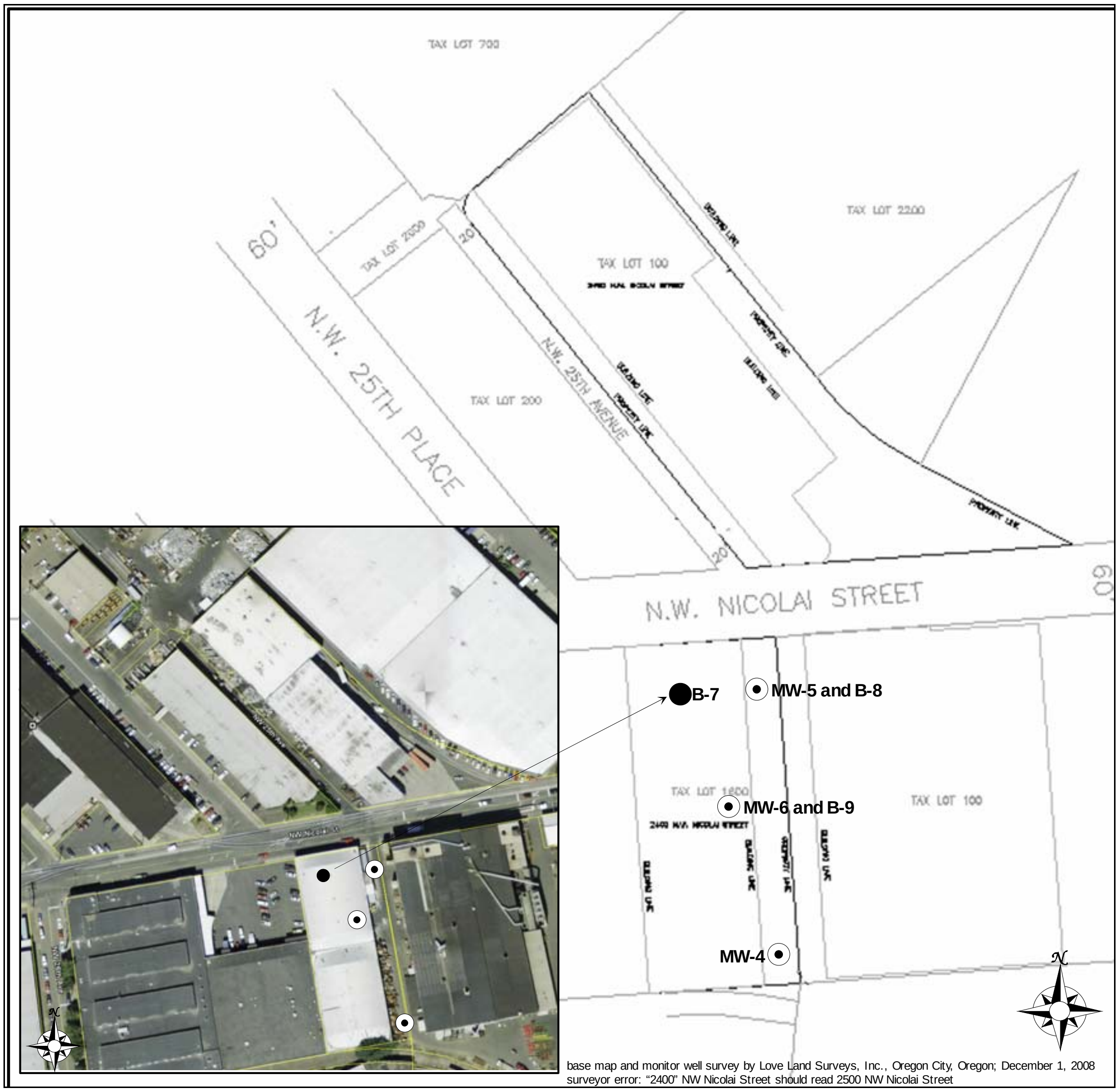


Figure 4 – Drilling Locations

Figure 5 – Groundwater Flow Direction, March 2010

APPENDIX A

"RESPONSES TO U.S. EPA CERCLA SECTION 104(e) INFORMATION REQUEST"

July 2008

(On CD)

APPENDIX B

"ENVRIONMENTAL SITE ASSESSMENT SUBSURFACE, CALBAG FACILITY"

MAY 2009

(On CD)

APPENDIX C

"GROUNDWATER MONITORING REPORT, CALBAG FACILITY"

May 2010

GROUNDWATER MONITORING REPORT

CALBAG METALS COMPANY FACILITY
2500 NW NICOLAI STREET
PORTLAND, OREGON
ECSI No. 5238

Prepared for

Shaker Square LLC

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May 2010

Contents

1 INTRODUCTION

1.1 Purpose

This Report is prepared for Shaker Square LLC for their property located at 2500 NW Nicolai Street, Portland, Oregon (Site). This Groundwater Monitoring Report is in partial response to an Oregon Department of Environmental Quality (DEQ) Independent Cleanup Program (ICP) Agreement.

DEQ reviewed a Site subsurface investigation report, "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009, and provided comments in a letter dated October 28, 2009 that included the need to conduct an additional round of groundwater sampling during February or March 2010. The purpose of this groundwater monitoring report is to summarize all Site groundwater monitoring data and to evaluate the nature and extent of potential contamination in shallow groundwater. Groundwater monitoring is carried out to support a potential No Further Action (NFA) determination for the Site.

1.2 Scope of Services

This work is performed to determine whether contaminants, primarily metals, have impacted shallow groundwater beneath the Site. The following are specific objectives:

1. Conduct a second round of groundwater monitoring to include water level measurement and groundwater sampling, for three onsite monitor wells.
2. Determine shallow groundwater gradient beneath the Site for the March 2010 monitoring event.
3. Evaluate the nature and extent of contamination in shallow groundwater.

2 BACKGROUND

2.1 Site Description

The Site is located at 2500 NW Nicolai Street, Portland, Oregon (see Figure 1). Site facilities include a large building used as a metal recycling warehouse. The 30,000 square-foot building consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof. Historical records indicate the building on the Site was constructed on undeveloped land in 1949, and has been occupied since that time.

The Site is operated by Calbag Metals Company ("Calbag"). Calbag purchases used and scrap nonferrous metal, then cuts, sorts, and packages the metals for resale. The purchased metals include primarily aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or polychlorinated biphenyls (PCBs). Fabrication does not occur at the Site.

2.2 Physical Setting

The Site consists of 0.9 acres of land developed with the industrial building, and 0.23 acres of undeveloped land. The ground surface at the site slopes gradually to the northeast. Ground cover consists primarily of a building and asphalt parking. The site is zoned industrial. The Site and adjacent properties are shown in Figure 3.

The Site is located within Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). Quaternary alluvium deposits of river deposits of silt, sand and organic-rich clay separate the Site from the Willamette River. The geologic map depicts Holocene artificial fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill ends that were deposited to the north of the Site.

2.3 Previous Assessments

In response to a US Environmental Protection Agency (EPA) CERCLA Section 104(e) information request, Site information was summarized in "Responses to U.S. EPA CERCLA Section 104(e) Information Request", dated July 2008, and was submitted to EPA.

A soil and groundwater investigation was conducted between October 2008 and January 2009, and included drilling and sampling three soil borings and installation of three monitoring wells. An initial round of groundwater samples were collected from the monitoring wells. Results of the soil and groundwater investigation were summarized in "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009. The findings of the report include (1) barium, chromium and lead were detected and only lead was detected above the DEQ soil screening levels, (2) pesticides were not detected in soil and are not identified as a site contaminant, (3) PCBs were not detected in soil and are not identified as a site contaminant, (4) several polynuclear aromatic hydrocarbons (PAHs) were detected in one soil sample at elevated concentrations, (5) petroleum hydrocarbons were not detected in soil, and (6) four volatile organic chemicals were detected in groundwater at very low concentrations including carbon tetrachloride, chloroform, o-xylene and tetrachloroethene.

3 INVESTIGATION ACTIVITIES

A second round of groundwater monitoring was conducted in March 2010 and included measurement of groundwater levels and sampling groundwater in three onsite monitor wells. Monitor well MW-4 was installed in October 2008, and wells MW-5 and MW-6 were installed in January 2009. Initial groundwater monitoring was conducted shortly after the monitor wells were installed in November 2008 and February 2009. The initial data was reported in the May 2009 subsurface report, and is included here for completeness.

3.1 Groundwater Monitoring

Groundwater levels were measured in each monitoring well prior to sampling groundwater. At each well, the locking cap was removed and the conditions in the well were allowed to equilibrate to external conditions. General weather and well conditions, as well as monitoring data, were noted on the monitoring logs included in Appendix A. To measure water levels, a water level probe was lowered into the well until the probe contacted the water surface in the well, signaled by a buzzer. The depth in feet to the water surface was measured from a surveyed measuring point on the rim of the well casing and the elevation of the water surface was calculated with respect to feet above sea level.

Once groundwater levels were measured, well purging and groundwater sampling in each monitor well was conducted using low-flow techniques. A pump and dedicated polyethylene tubing were lowered into the well casing and positioned toward the middle of the well screen. The low-flow pump was then turned on and the pump rate set low enough to minimize drawdown of the water level within the well during purging. The monitor wells were purged and groundwater quality parameters, including temperature, pH, and conductivity, were periodically monitored until they stabilized.

Turbidity was visually monitored and recorded, and was also used as an indication of when the groundwater was stable for sampling. After stabilization was reached, a groundwater sample was collected following the low-flow technique described above. Groundwater samples were prepared according to protocol established by the analytical laboratory.

A chain of custody was prepared for all samples. Appropriate decontamination procedures were followed to prevent cross contamination of the drilling equipment between boreholes, and of groundwater samples between sample depths and between boring locations. Any investigation derived waste, soil and groundwater, was collected and disposed by Calbag.

3.2 Chemical Analyses and Methods

Metals and petroleum hydrocarbons are the main chemicals of concern based on the operations of the facility. In addition, the Guilds Lake Remediation Project and other offsite properties in the vicinity of the Site previously detected hazardous substances including PCBs, petroleum hydrocarbons, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples from the Site were analyzed for at least constituents detected in the vicinity. Both pesticides and PCBs have not been identified as Site-specific contaminants.

All groundwater samples were analyzed for petroleum hydrocarbons by NWTPH, volatile organics (VOCs) by EPA Method 8260B, PAHS by EPA Method 8270D/SIM, PCBs by EPA Method 8082, pesticides by EPA Method 8081A, total and dissolved Priority Pollutant Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by EPA Method 200.8/7470A, hexane extractable material ("HEM" – oil and grease) by EPA Method 1664, and total organic carbon (TOC). Dissolved metals were analyzed only for the November 2009 groundwater sampling round.

4 GROUNDWATER MONITORING RESULTS

Data quality objectives for this investigation are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in shallow groundwater above concentrations of concern. Groundwater sampling data were evaluated by comparing to appropriate screening criteria to support a potential NFA determination for the Site.

4.1 Groundwater Monitoring

Groundwater levels were measured in all wells during the round of groundwater monitoring on February 20, 2009, and again on March 22 and 30, 2010. During the second round of groundwater monitoring, equipment failure required a return trip to the Site on March 30 to complete the groundwater monitoring. Groundwater level measurements for both rounds of groundwater monitoring, as well as elevations and surveyed locations of the monitor wells are presented in Table 1.

Groundwater gradients for the February 2009 and March 2010 monitoring events are shown on the maps of Figure 5 and 6. The shallow groundwater gradient beneath the Site is very low to flat. Based on measured water levels, shallow groundwater flows generally to the north, toward Nicolai Street and in the general downstream flow direction of the Willamette River. In this area of northwest Portland, shallow groundwater flow may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. Further investigation would be required to better define the groundwater flow directions and gradients with respect to the general vicinity of the Site.

Table 1 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-4	65.357	65.118	690469.698	7637709.180	55	45/55	2/20/09	48.69	16.43
							3/30/10	50.52	14.6
MW-5	64.22	64.02	690697.319	7637695.231	50	40/50	2/20/09	47.71	16.31
							3/22/10	49.57	14.45
MW-6	67.17	66.95	690566.067	7637672.419	55	45/55	2/20/09	50.58	16.37
							3/22/10	52.43	14.52

Notes:

Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Well MW-4 installed November 1, 2008; MW-5 and MW-6 installed January 31, 2009.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008 and March 3, 2009.

4.2 Analytical Results

Results of November 2008/February 2009 and March 2010 groundwater sample laboratory analyses are summarized in the following Table 2. Laboratory reports are included in Appendix A. Shallow groundwater beneath the Site is not currently used for consumption, since water use is served by the City of Portland Water Bureau, and no plans exist for future use of shallow groundwater. Groundwater flowing from beneath the Site flows to toward the Willamette River and likely discharges to the river a distance of ½ mile or more downgradient from the Site. A potential beneficial use of groundwater may be discharge to surface water. Therefore, based on current and reasonable future use of groundwater, concentrations of chemicals that were detected in groundwater were compared to DEQ screening level values (SLVs) for freshwater aquatic receptors. Constituents that were detected at concentrations that exceed DEQ SLVs are shaded yellow.

In general, total and dissolved metals were not detected in groundwater from the three monitor wells. However, the practical quantitation limits (PQLs) for beryllium, cadmium, copper, and selenium are slightly higher to two times higher than their SLVs. The PQL for silver is two orders of magnitude higher than its SLV. The exception is for well MW-4 during the March 2010 monitoring, where four total metals (chromium, copper, lead and zinc) were detected at concentrations that were up to two times higher than their SLVs. Total metals concentrations may not be representative of dissolved conditions as they may also be measuring soil particles incorporated into samples. During sampling of MW-4, pump problems may have increased the MW4 sample turbidity. The March 2010 samples were not analyzed for dissolved metals.

PCBs and pesticides were not detected in Site groundwater and are also not identified as Site contaminants, although they are detected in other locations in the general Site vicinity. The PQL for aroclor 1254 was slightly higher than its SLV. No source of PCB soil contamination was identified in the soil samples reported in the May 2009 subsurface investigation report.

PAHs were not detected in Site groundwater at concentrations exceeding DEQ SLVs. Petroleum hydrocarbons were not detected; petroleum hydrocarbons constituents would be evaluated through VOC SLVs.

Four VOCs, including carbon tetrachloride, chloroform, o-xylene and tetrachloroethene (PCE), were detected in shallow groundwater at very low concentrations that did not exceed their DEQ SLVs. Chloroform was detected in MW-4 (1.2 ug/l) and MW-5 (3.2 ug/l) during the March 2010 sampling event. PCE was detected in MW-4 (0.3 ug/l) and MW-6 (0.21 ug/l) during the February 2009 sampling event. Chloroform and carbon tetrachloride are not chemicals used on the Site and may be either laboratory contaminants, or for chloroform, a relic of potable water treatment. PCE also is not a chemical used on the Site and was detected at a higher concentration at the upgradient margin of the property.

Table 2 - Groundwater Analyses Monitor Wells

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
METALS-TOTAL (EPA 6010B/7471A)							
Antimony	1600	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	<3.3	**6.2**	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	<11	<11	<11	<11	<11	<11
Cadmium	2.2	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium (VI)	11	<11	**24**	<11	<11	<11	<11
Copper	9	<11	**28**	<11	<11	<11	<11
Lead	2.5	<1.1	**9.7**	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	<22	**25**	<22	<22	<22	<22
Selenium	5	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12	<11	<11	<11	<11	<11	<11
Thallium	40	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120	<28	**160**	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)							
Antimony	1600	<5		<5		<5	
Arsenic	150	<3		<3		<3	
Beryllium	5.3	<10		<10		<10	
Cadmium	2.2	<4		<4		<4	
Chromium (total)	11	<10		<10		<10	
Copper	9	<10		<10		<10	

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Lead	2.5	<1		<1		<1	
Mercury	0.77	<0.5		<0.5		<0.5	
Nickel	52	<20		<20		<20	
Selenium	5	<5		<5		<5	
Silver	0.12	<10		<10		<10	
Thallium	40	<5		<5		<5	
Zinc	120	<50		<50		<50	
PCBs AROCLORS (EPA 8082)							
Aroclor 1016		<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)							
alpha-BHC	2.2	<0.0047		<0.0047		<0.0047	
beta-BHC	2.2	<0.0047		<0.0047		<0.0047	
delta-BHC		<0.0047		<0.0047		<0.0047	
gamma-BHC (Lindane)	0.052	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	<0.0047		<0.0047		<0.0047	
Aldrin	0.06	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	<0.0047		<0.0047		<0.0047	

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
alpha-Chlordane	0.0043	<0.0047		<0.0047		<0.0047	
4,4'-DDE		<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	<0.0047		<0.0047		<0.0047	
Endrin	0.036	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde		<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03	<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate		<0.0047		<0.0047		<0.0047	
Endrin Ketone		<0.019		<0.019		<0.019	
Toxaphene	0.0002	<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)							
1,1,1,2-Tetrachloroethane	186	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrachoroethane	2200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
1,2-Dibromo-3-chloropropane		<1	<1	<1	<1	<1	<1
1,2-Dibromoethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	20000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)		<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4760	<1	<1	<1	<1	<1	<1
2-Chlorotoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99	<2	<2	<2	<2	<2	<2
4-Chlorotoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1500	<5	<5	<5	<5	<5	<5
Benzene	130	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromobenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		<1	<1	<1	<1	<1	<1
Bromomethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Tetrachloride	74	<0.2	<0.2	<0.2	<0.2	**0.35**	<0.2
Chlorethane		<1	<1	<1	<1	<1	<1
Chlorobenzene	50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Chloroform	1240	<0.2	**1.2**	<0.2	**3.2**	<0.2	<0.2
Chloromethane		<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethylene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene							
Hexachlorobutadiene	9.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)		<1	<1	<1	<1	<1	<1
Isopropylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2200	<1	<1	<1	<1	<1	<1
Methyt-Butyl Ether		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone		<2	<2	<2	<2	<2	<2
Naphthalene	620	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		<0.2	<0.2	<0.2	<0.2	<0.2	**0.22**
p-Isopropyltoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethene	840	**0.3**	<0.2	<0.2	<0.2	**0.21**	<0.2

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Toluene	9.8	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21900	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16	<2	<2	<2	<2	<2	<2
Vinyl Chloride		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)							
Naphthalene	620	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
2-Methylnaphthalene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
1-Methylnaphthalene	201	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Acenaphthylene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Acenpththene	520	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Fluorene	3.9	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Phenanthrene	6.3	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Anthracene	13	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Fluoranthene	6.16	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Pyrene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Benzo(a)anthracene	0.027	<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Chrysene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(b)fluoranthene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(k)fluoranthene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(a)pyrene	0.014	<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Ideno(1,2,3-c,d)pyrene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Dibenz(a,h)anthracene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(g,h,i)perylene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
PETROLEUM HYDROCARBONS							
Diesel Range (NWTPH-Dx)		<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)		<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)		<5200		<5200		<5200	
Total Organic Carbon			<1000		<1000		<1000

Notes:
1Freshwater aquatic screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998. Blank cell means no criterion available.
[2]Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.
[3]Blank cells mean not analyzed.
Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value. ***Bolded*** *values are concentrations detected above the respective PQL.*
Grey shaded cells are PQLs greater than DEQ SLV; Yellow shaded cells are detected concentrations that exceed DEQ SLVs.

5 FINDINGS AND CONCLUSIONS

The Site investigation, including soil and groundwater results reported in the May 2009 subsurface report, was intended to carry out a site investigation on a voluntary basis. No beneficial use has been identified for onsite groundwater, although groundwater likely discharges to the Willamette River downgradient from the site so discharge to surface water may be a potential beneficial use of the shallow groundwater. Groundwater data collected were tabulated and compared to DEQ SLVs for freshwater aquatic receptors.

Metals were generally not detected in groundwater at concentrations that exceed their SLVs although some of the metal PQLs were slightly higher than their SLVs. The exception is MW-4 for the March 2010 sampling event where total chromium, copper, lead, and zinc were detected at concentrations up to two times higher than their SLVs. However, because these are total concentrations (dissolved metals were not analyzed for in March 2010) they may not be representative of dissolved concentrations. None of these metals were detected in onsite soil at concentrations that exceeded risk-based screening levels.

Carbon tetrachloride, chloroform, o-xylene and PCE were detected in shallow groundwater at very low concentrations that did not exceed their DEQ SLVs. Carbon tetrachloride and chloroform may be laboratory contaminants; chloroform may be a relic of potable water treatment.

No PCBs, PAHs or petroleum hydrocarbons were detected in shallow groundwater at concentrations that exceed DEQ SLVs.

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at concentrations that exceed DEQ screening criteria. Because of the degree of attenuation likely to occur if these very low concentrations were to migrate offsite and discharge to the Willamette River more than ½ mile downgradient, are not expected to present a threat to aquatic receptors in the river.

6 LIMITATIONS

This report has been prepared for use by the Oregon Department of Environmental Quality and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Oregon DEQ should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

GeoPro LLC does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk.

Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of work by others. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. GeoPro LLC is not responsible for references to regulatory terms, practices, numeric data, practices or conditions that may lead to other conclusions if such references are not in final form.

Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

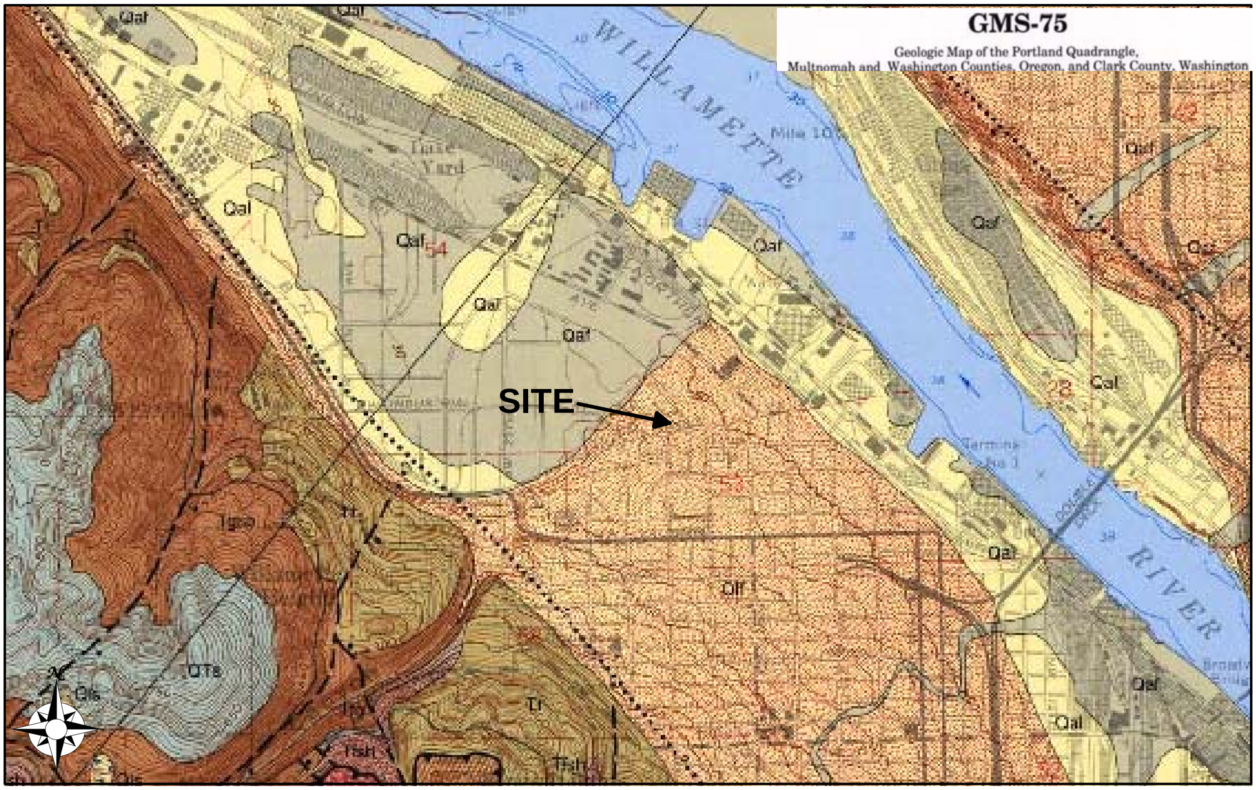
Richard C. Kent, R.G.

GeoPro Geologic Services LLC

Figure 1 – Location Map, Portland, Oregon

Guilds Lake Remediation Project

Figure 2 – Adjacent Properties, NW Nicolai St., Portland, Oregon



Legend

Qaf

Artificial fill (Holocene) — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal

Alluvium (Quaternary) — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff

Fine-grained facies (Pleistocene) — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 3 – Geology Map, Northwest Portland, Oregon

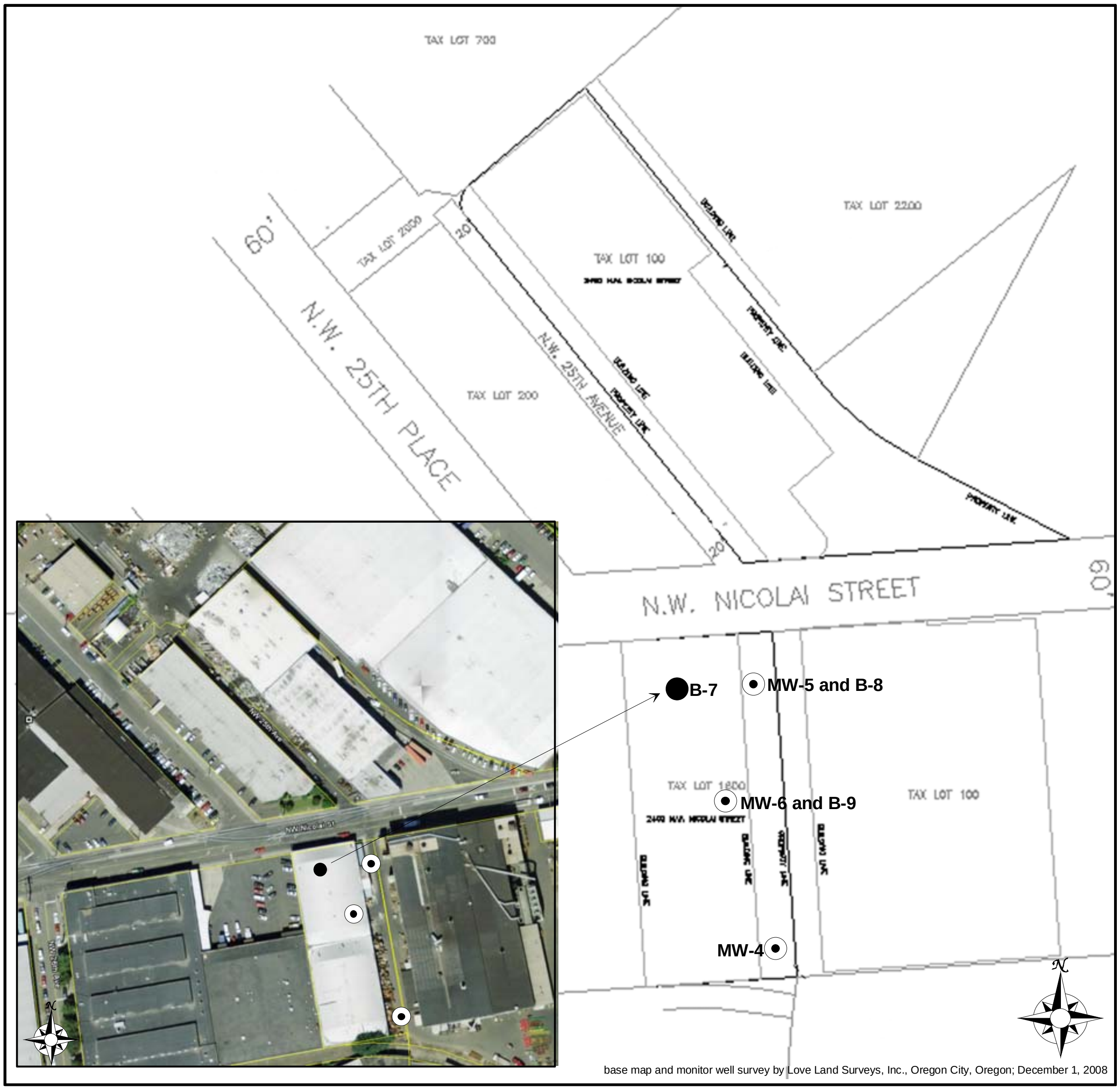


Figure 4 – Monitoring Well Locations

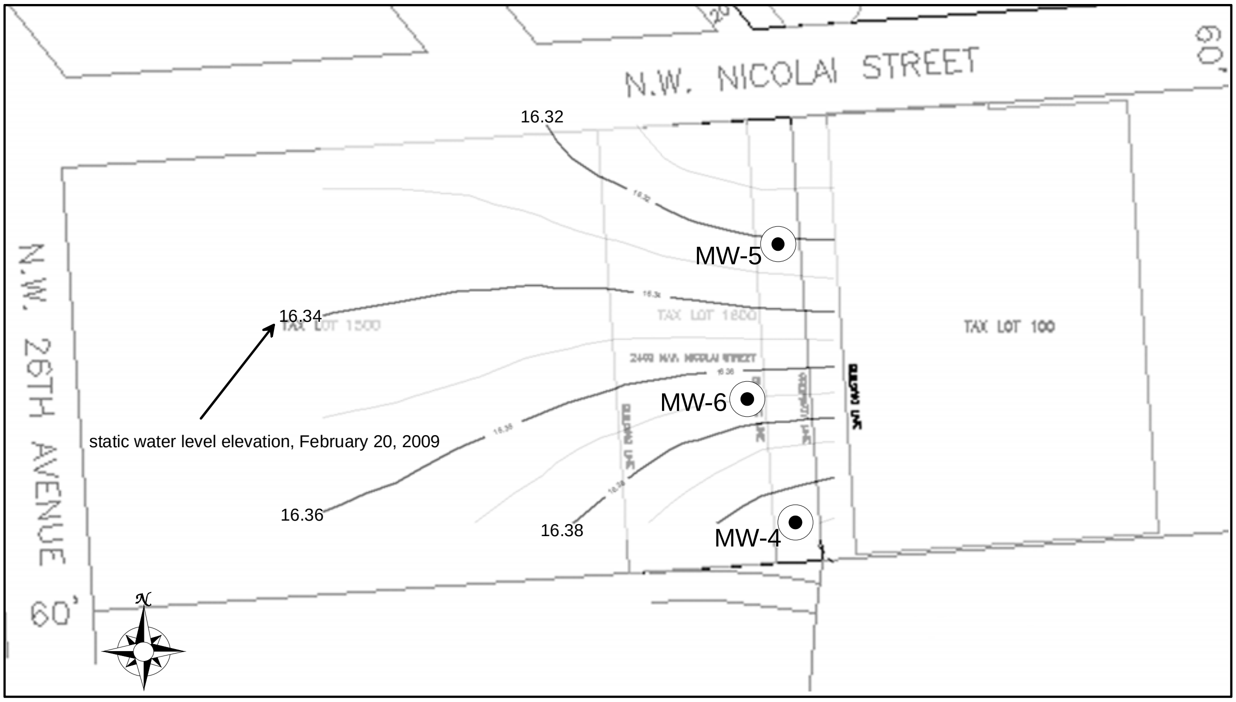


Figure 5 – Groundwater Flow Direction, February 20, 2009

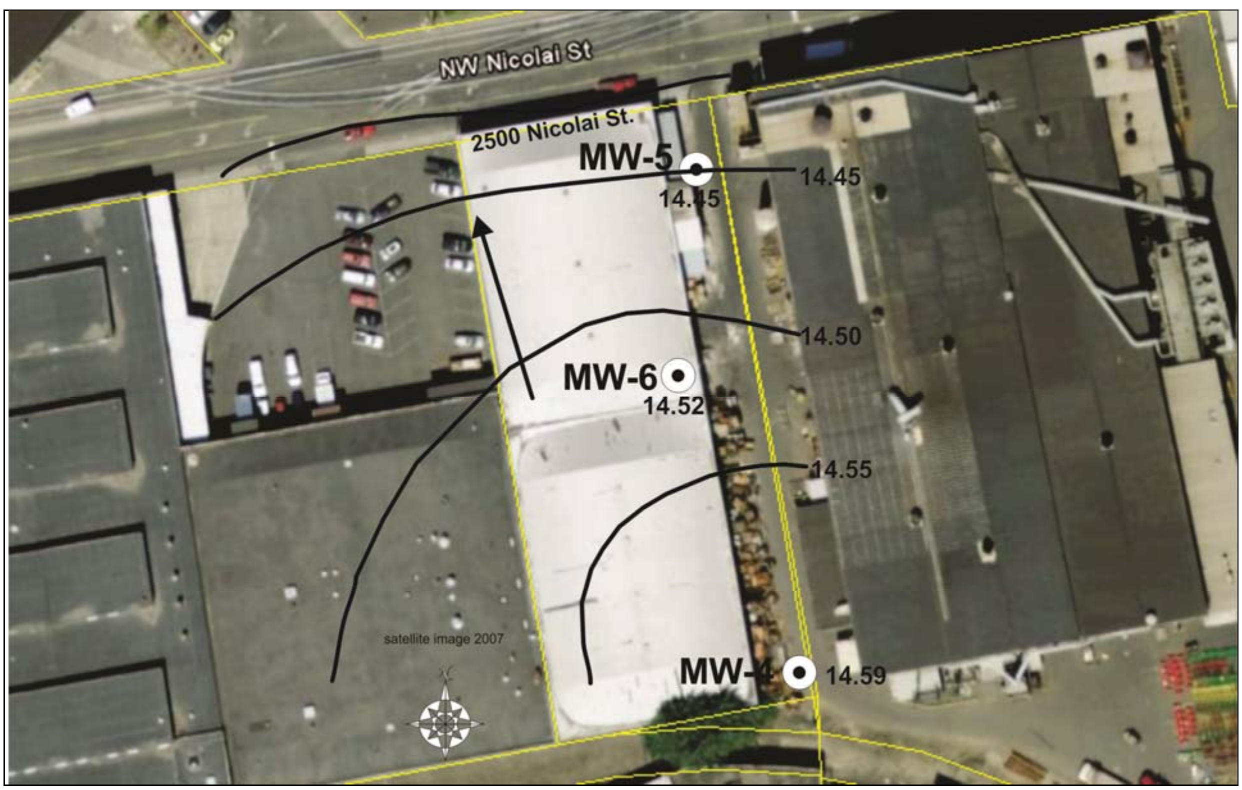


Figure 6 – Groundwater Flow Direction, March 22 and 30, 2010

APPENDIX D

LEVEL I SCOPING ECOLOGICAL RISK ASSESSMENT

ATTACHMENT 3
LEVEL I SCOPING REPORT

1 EXISTING DATA SUMMARY

The Calbag Metals Company facility (Site) is located at 2500 NW Nicolai Street, in the industrial district of northwest Portland. The Site consists of 1.13 acres of land, with 0.9 acres developed with a 30,000 square foot warehouse building, and the rest undeveloped but covered with asphalt paving. The Site is bounded to the north by NW Nicolai Street with a sidewalk between the Calbag structure and the street; to the east by the paved NW 25th Avenue and farther east the ESCO building; to the south by a paved alleyway between the Calbag facility and other adjacent industrial properties; and to the west by Rejuvenation paved parking at Nicolai Street and an extension of the Rejuvenation building co-joined to the southern part of the Calbag warehouse building.

Prior to 1949 the Site property was undeveloped. The existing warehouse was constructed onsite in 1949 and has housed industrial businesses to the present. Calbag Metals Company began operating at the Site in 1960. Since then, Calbag has operated a metals recycling facility that purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The metal, including aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper, arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. The scrap metal is offloaded into the warehouse and is recycled inside the building.

There is no waste treatment or disposal facilities onsite. Waste oil derived from the recycling process is stored in 55-gallon drums in a metal shed east of the warehouse. There are no records identified in the EPA 104(e) information request response (July 2008) or Phase I Environmental Assessment (August 2008) of any hazardous materials leaks, spills or other releases at the Site.

The property owner conducted a voluntary site investigation to determine whether site-related chemicals had impacted soil and groundwater at the Site. Four soil borings and three groundwater monitoring wells were installed and sampled. Soil and groundwater samples were analyzed for site-related chemical including metals and petroleum hydrocarbons, and other chemicals detected at offiste properties in the general area of the Site including polychlorinated biphenyls (PCBs), pesticides, polycyclic aromatic hydrocarbons (PAHs) and volatile organic chemicals (VOCs).

Metals and PAHs were detected in soil at low concentrations. Metals detected include barium (up to 270 milligrams per kilogram (mg/kg)), total chromium (up to 26 mg/kg), and lead (up to 67 mg/kg). Several PAHs were detected in one boring at 3 feet depth beneath the existing warehouse floor slab at concentrations up to 1400 ug/kg for benzo(b)fluoranthene and 1600 ug/kg for ideno(1,2,3-c,d)pyrene. No PCBs or petroleum hydrocarbons were detected in soil. Soil samples were not analyzed for pesticides or VOCs.

Total metals were detected in one groundwater sample collected from MW-4 near the southeast corner of the warehouse; chromium, copper, lead and zinc exceeded DEQ screening level values

(SLVs) for freshwater aquatic receptors. However, this one total analysis results may not be representative of groundwater conditions. Four VOCs, including carbon tetrachloride, chloroform, o-xylene and tetrachloroethene, were detected in groundwater an low concentrations that do not exceed DEQ SLVs. Metals were not detected in any other groundwater samples above DEQ SLVs. PCBs, pesticides, PAHs and petroleum hydrocarbons were not detected in the groundwater samples.

The Site is zoned general industrial (IG) and is in an area of dense industrial development. The general vicinity of the Site is designated a heavy industry sanctuary by the City of Portland. The Site land use will remain industrial for the foreseeable future. The Site is underlain by Pleistocene-age glacial flood sediments with about 1 foot of artificial fill at ground surface. No surface water is present on the Site and the nearest surface water body is the Willamette River approximately ½ mile to the east. Groundwater is present at more than 45 feet below ground surface with no discharge point at or near the Site but groundwater likely discharges to the river more than ½ mile to the north. There are no sensitive environments, such as wetlands, springs or similar on or near the Site. The eastern slopes of the Tualatin Mountains begin approximately ½ miles to the west of the Site.

Low concentrations of metals and PAHs are present in limited areas of soil, and low concentrations of some metals, carbon tetrachloride, chloroform, o-xylene and tetrachloroethene in groundwater. However, the limited presence of metals and PAHs in soil is under the existing warehouse floor slab, and as such is not accessible to human or ecological receptors. VOCs were detected at very low concentrations that do not exceed DEQ SLVs. Except for metals, no other constituent detected in soil or groundwater are identified as a site-related constituents. No significant soil sources of contamination were identified onsite.

2 SITE VISIT SUMMARY

The contaminants of interest for the Site include metals and petroleum hydrocarbons.

There are no observed environmental impacts on the Site. The site property is completely covered with the existing 30,000 square foot warehouse building and asphalt paving. All adjacent areas are either paved streets (NW Niclolai to the north, NW 25th Avenue to the east, and alleyway to the south), paved parking (Rejuvenation to the northwest), or buildings (co-joined Rejuvenation building to the southwest). There is no existing habitat of any kind (no landscaped or ruderal areas), and no areas of exposed Site soil.

No ecological receptors, that would include ecologically significant species, were observed during the site visit.

There are no complete exposure pathways for ecological receptors at the Site because soil is not exposed, no habitat of any kind exists, and no surface water or other sensitive areas are present at or near the property.

3 RECOMMENDATIONS

No further evaluation of ecological risk is recommended because of the lack of exposure mechanisms for ecological receptors, and the limited areas of low concentrations of metals and PAHs that occur in soil beneath the warehouse floor slab.

4 REFERENCES

Oregon Department of Environmental Quality, 1998, “Guidance for Ecological Risk Assessment: Levels I, II, III, IV”, Final, April 1998

ATTACHMENT 1
Ecological Scoping Checklist

Site Name	Calbag Metals Company
Date of Site Visit	September 7, 2010
Site Location	2500 NW Nicolai Street, Portland, Oregon
Site Visit Conducted by	Richard Kent

Part ❶

CONTAMINANTS OF INTEREST Types, Classes, Or Specific Hazardous Substances ‡ Known Or Suspected	Onsite	Adjacent to or in locality of the facility †
metals	x	
petroleum hydrocarbons (not detected)	NA	

‡ As defined by OAR 340-122-115(30) † As defined by OAR 340-122-115(34)

Part ❷

OBSERVED IMPACTS ASSOCIATED WITH THE SITE	Finding
Onsite vegetation (None, Limited, Extensive)	N
Vegetation in the locality of the site (None, Limited, Extensive)	N
Onsite wildlife such as macroinvertebrates, reptiles, amphibians, birds, mammals, other (None, Limited, Extensive)	N
Wildlife such as macroinvertebrates, reptiles, amphibians, birds, mammals, other in the locality of the site (None, Limited, Extensive)	N
Other readily observable impacts (None, Discuss below)	N

Discussion:

Site is located in densely developed industrial area in northwest Portland. The property is entirely covered by a 30,000 sq. ft. warehouse, and bounded on all sides by asphalt and buildings. NW Nicolai to the north is paved. NW 25th Avenue and ESCO building to the east, paved alleyway to south, and Rejuvenation building and parking to the west. The locality of the facility is the property boundaries and no soil is exposed.

ATTACHMENT 1
Ecological Scoping Checklist (cont'd)

Part ❸

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding
Terrestrial - Wooded	
Percentage of site that is wooded	0
Dominant vegetation type (Evergreen, Deciduous, Mixed)	NA **P** *
Prominent tree size at breast height, i.e., four feet (<6", 6" to 12", >12")	NA
Evidence / observation of wildlife (Macroinvertebrates, Reptiles, Amphibians, Birds, Mammals, Other)	none
Terrestrial - Scrub/Shrub/Grasses	
Percentage of site that is scrub/shrub	0
Dominant vegetation type (Scrub, Shrub, Grasses, Other)	NA **P**
Prominent height of vegetation (<2', 2' to 5', >5')	NA
Density of vegetation (Dense, Patchy, Sparse)	NA **P**
Evidence / observation of wildlife (Macroinvertebrates, Reptiles, Amphibians, Birds, Mammals, Other)	none
Terrestrial - Ruderal	
Percentage of site that is ruderal	0
Dominant vegetation type (Landscaped, Agriculture, Bare ground)	NA **P**
Prominent height of vegetation (0', >0' to <2', 2' to 5', >5')	NA
Density of vegetation (Dense, Patchy, Sparse)	NA **P**
Evidence / observation of wildlife (Macroinvertebrates, Reptiles, Amphibians, Birds, Mammals, Other)	none
Aquatic - Non-flowing (lentic)	
Percentage of site that is covered by lakes or ponds	0
Type of water bodies (Lakes, Ponds, Vernal pools, Impoundments, Lagoon, Reservoir, Canal)	NA
Size (acres), average depth (feet), trophic status of water bodies	NA
Source water (River, Stream, Groundwater, Industrial discharge, Surface water runoff)	NA
Water discharge point (None, River, Stream, Groundwater, Wetlands impoundment)	N
Nature of bottom (Muddy, Rocky, Sand, Concrete, Other)	NA **P**
Vegetation present (Submerged, Emergent, Floating)	NA **P**
Obvious wetlands present (Yes / No)	N
Evidence / observation of wildlife (Macroinvertebrates, Reptiles, Amphibians, Birds, Mammals, Other)	none
Aquatic - Flowing (lotic)	
Percentage of site that is covered by rivers, streams (brooks, creeks), intermittent streams, dry wash, arroyo, ditches, or channel waterway	0
Type of water bodies (Rivers, Streams, Intermittent Streams, Dry wash, Arroyo, Ditches, Channel waterway)	NA
Size (acres), average depth (feet), approximate flow rate (cfs) of water bodies	NA **P**
Bank environment (cover: Vegetated, Bare / slope: Steep, Gradual / height (in feet))	NA
Source water (River, Stream, Groundwater, Industrial discharge, Surface water runoff)	NA
Tidal influence (Yes / No)	N
Water discharge point (None, River, Stream, Groundwater, Wetlands impoundment)	N
Nature of bottom (Muddy, Rocky, Sand, Concrete, Other)	NA
Vegetation present (Submerged, Emergent, Floating)	NA **P**
Obvious wetlands present (Yes / No)	N
Evidence / observation of wildlife (Macroinvertebrates, Reptiles, Amphibians, Birds,	none

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding
Mammals, Other)	
Aquatic - Wetlands	
Obvious or designated wetlands present (Yes / No)	N
Wetlands suspected as site is/has (Adjacent to water body, in Floodplain, Standing water, Dark wet soils, Mud cracks, Debris line, Water marks)	NA
Vegetation present (Submerged, Emergent, Scrub/shrub, Wooded)	NA **P**
Size (acres) and depth (feet) of suspected wetlands	NA
Source water (River, Stream, Groundwater, Industrial discharge, Surface water runoff)	NA
Water discharge point (None, River, Stream, Groundwater, Impoundment)	NA
Tidal influence (Yes / No)	N
Evidence / observation of wildlife (Macroinvertebrates, Reptiles, Amphibians, Birds, Mammals, Other)	none

* **P**: Photographic documentation of these features is highly recommended.

NA - not applicable

Part ❹

ECOLOGICALLY IMPORTANT SPECIES / HABITATS OBSERVED
No ecologically important species or habitats were observed on the site. The property is completely covered by a warehouse
building and all bounding sides are covered by streets, buildings, paved parking areas or a paved alleyway.

ATTACHMENT 2
Evaluation of Receptor-Pathway Interactions

EVALUATION OF RECEPTOR-PATHWAY INTERACTIONS	Y	N	U
Are hazardous substances present or potentially present in surface waters? **AND** **Are ecologically important species or habitats present?** **AND** **Could hazardous substances reach these receptors via surface water?**		N N N	
When answering the above questions, consider the following: • Known or suspected presence of hazardous substances in surface waters. • Ability of hazardous substances to migrate to surface waters. • Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters. Aquatic receptors may be exposed through osmotic exchange, respiration or ventilation of surface waters. • Contaminants may be taken-up by terrestrial plants whose roots are in contact with surface waters. • Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.			
Are hazardous substances present or potentially present in groundwater? **AND** **Are ecologically important species or habitats present?** **AND** **Could hazardous substances reach these receptors via groundwater?**	Y	N N	
When answering the above questions, consider the following: • Known or suspected presence of hazardous substances in groundwater. • Ability of hazardous substances to migrate to groundwater. • Potential for hazardous substances to migrate via groundwater and discharge into habitats and/or surface waters. • Contaminants may be taken-up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1m depth). • Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.			

"Y" = yes; "N" = No, "U" = Unknown (counts as a "Y")

ATTACHMENT 2
Evaluation of Receptor-Pathway Interactions (cont'd)

EVALUATION OF RECEPTOR-PATHWAY INTERACTIONS	Y	N	U
Are hazardous substances present or potentially present in sediments? **AND** **Are ecologically important species or habitats present?** **AND** **Could hazardous substances reach these receptors via contact with sediments?**		N N N	
When answering the above questions, consider the following: • Known or suspected presence of hazardous substances in sediment. • Ability of hazardous substances to leach or erode from surface soils and be carried into sediment via surface runoff. • Potential for contaminated groundwater to upwell through, and deposit contaminants in, sediments. • If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods. Aquatic receptors may be directly exposed to sediments or may be exposed through osmotic exchange, respiration or ventilation of sediment pore waters. • Terrestrial plants may be exposed to sediment in an area that is only periodically inundated with water. • If sediments are present in an area that is only periodically inundated with water, terrestrial species may have direct access to sediments for the purposes of incidental ingestion. Aquatic receptors may regularly or incidentally ingest sediment while foraging.			
Are hazardous substances present or potentially present in prey or food items of ecologically important receptors? **AND** **Are ecologically important species or habitats present?** **AND** **Could hazardous substances reach these receptors via consumption of food items?**		N N N	
When answering the above questions, consider the following: • Higher trophic level terrestrial and aquatic consumers and predators may be exposed through consumption of contaminated food sources. • In general, organic contaminants with log K_{ow} > 3.5 may accumulate in terrestrial mammals and those with a log K_{ow} > 5 may accumulate in aquatic vertebrates.			

"Y" = yes; "N" = No, "U" = Unknown (counts as a "Y")

ATTACHMENT 2
Evaluation of Receptor-Pathway Interactions (cont'd)

EVALUATION OF RECEPTOR-PATHWAY INTERACTIONS	Y	N	U
Are hazardous substances present or potentially present in surficial soils? **AND** **Are ecologically important species or habitats present?** **AND** **Could hazardous substances reach these receptors via incidental ingestion of or dermal contact with surficial soils?**	Y	N N	
When answering the above questions, consider the following: • Known or suspected presence of hazardous substances in surficial (~1m depth) soils. • Ability of hazardous substances to migrate to surficial soils. • Significant exposure via dermal contact would generally be limited to organic contaminants which are lipophilic and can cross epidermal barriers. • Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash). • Contaminants in bulk soil may partition into soil solution, making them available to roots. • Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil or while grooming themselves clean of soil.			
Are hazardous substances present or potentially present in soils? **AND** **Are ecologically important species or habitats present?** **AND** **Could hazardous substances reach these receptors via vapors or fugitive dust carried in surface air or confined in burrows?**	Y	N N	
When answering the above questions, consider the following: • Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant > 10^{-5} atm-m^3/mol and molecular weight < 200 g/mol). • Exposure via inhalation is most important to organisms that burrow in contaminated soils, given the limited amounts of air present to dilute vapors and an absence of air movement to disperse gases. • Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that could be exposed to dust disturbed by their foraging or burrowing activities or by wind movement. • Foliar uptake of organic vapors would be limited to those contaminants with relatively high vapor pressures. • Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces.			

"Y" = yes; "N" = No, "U" = Unknown (counts as a "Y")

Appendix C

DEQ No Further Action Determination Letter

2500 NW Nicolai Street, August 25, 2011

Oregon
John A. Kitzhaber, MD, Governor

Department of Environmental Quality
Nortwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
Fax: (503) 229-6945
TTY: (800) 736-2900

August 25, 2011

Mr. Jeffrey C. Wolfstone
601 SW Second Ave., Suite 2100
Portland, OR 97204

RE: No Further Action Determination
Calbag Metals Site
2500 NW Nicolai Street
Portland, Oregon 97217
ECSI Site ID No. 5238

Dear Mr. Wolfstone:

The Oregon Department of Environmental Quality (DEQ) has completed a review of the document entitled *Independent Cleanup Pathway Final Report (ICP Report)*, dated November 2010 and submitted to DEQ on the behalf of the Shaker Square LLC. The report and supporting investigations were reviewed by DEQ under an Independent Cleanup Pathway (ICP) agreement dated August 14, 2009. The property consists of Tax Lots 1 through 6, Block 3 of the Versteegs Addition, Multnomah County, Oregon.

The DEQ staff report, entitled "No Further Action Recommendation" and dated August 12, 2011, provides a summary of the site environmental conditions. The DEQ staff report is attached and other site information is available at the DEQ Northwest Region for public review.

Based on the review of site information, DEQ has determined that no further action is required to address environmental contamination at the Site provided that any future ground-disturbing work on the site should include soil screening, testing, and proper management to protect site workers and identify proper disposal of any soil removed from the site.

The Calbag Metals Site at 2500 NW Nicolai Street has not performed a Source Control Evaluation (SCE). Given that surface drainage on-site ultimately discharge to the Willamette River, and as a site located within the Portland Harbor Superfund study area basin, a SCE will need to be completed for the site. DEQ has requested additional information regarding site stormwater drainage and will determine what level of SCE is needed.

DEQ concludes that based on the information presented to date, the Calbag Metals site is currently protective of public health and the environment. The site requires no further action under the Oregon Environmental Cleanup Law, ORS 465.200 et seq., unless new or previously undisclosed information becomes available at some later date.

DEQ recommends keeping a copy of all of the documentation associated with this remedial action with the permanent facility records. If you have any questions about this letter, please contact Jim Orr at 503-229-5039.

Sincerely,

Charles Harman
Northwest Region Cleanup Program Manager

cc: Jim Orr, DEQ Project Manager
Mr. Kevin Loftus, Shaker Square LLC
Richard Kent, GeoPro Geologic Services
Peter Trabusiner, Blue Mountain Environmental Consulting
Linda Scheffler, City of Portland
Kristine Koch, EPA Portland Harbor
ECSI File #5281

Attachments:
DEQ No Further Action Recommendation, August 25, 2011

State of Oregon
Department of Environmental Quality — Memorandum

Date: August 25, 2011

To: Calbag Metals Facility
2500 NW Nicolai Street
ECSI# 5238

From: Jim Orr, Northwest Cleanup Section

Subject: No Further Action Recommendation

Purpose

The Oregon Department of Environmental Quality (DEQ) has completed a review of the document titled *Independent Cleanup Pathway Final Report (ICP Report)*, dated November 2010 and submitted to DEQ on the behalf of the Shaker Square LLC for the property located at 2500 NW Nicolai Street in Portland. The samples submitted for this investigation were a subset of samples collected as part of the investigations of separate properties located at 2495 and 2500 NW Nicolai Street sites. The Calbag site at 2495 NW Nicolai Street will be evaluated under DEQ's Voluntary Cleanup Program at a later date.

Shaker Square, LLC submitted this project under DEQ's Independent Cleanup Pathway Program and requested a No Further Action (NFA). DEQ was only provided with a limited amount of sampling data for the site. However, given the known site history, and that there were no significant impacts exhibited by the collected soil and groundwater data, DEQ did not see the need for additional data collection. The report and data from supporting investigations for only the site at 2500 NW Nicolai Street was reviewed by DEQ under an Independent Cleanup Pathway agreement dated August 14, 2009.

This ICP Report provides the basis for DEQ's proposed conditional NFA recommendation for the Calbag Metals Facility (Site) located 2500 NW Nicolai Street, Portland. The property consists of Tax Lots 1 through 6, Block 3 of the Versteegs Addition, in Multnomah County, Oregon. DEQ's NFA recommendation is proposed following the completing of a risk-based evaluation of site contamination in accordance with DEQ's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* guidance (September 2003, with screening table last updated September 2009) under Oregon Administrative Rules (OAR) Chapter 340, Division 122, Sections 0205 to 0360. This recommended action also was selected in accordance with Oregon Revised Statutes (ORS) 465.200 through 465.455 and OAR Chapter 340, Division 122, Sections 010 to 0140.

Site Layout and Operating History

The Site is located in an industrialized portion of northwest Portland, approximately ½ mile southwest of the Willamette River. Historical Sanborn Maps indicate that the building was constructed on undeveloped land in 1949 and was described as a "Junk Warehouse". Calbag Metals Company purchased the site in 1960 and has operated a nonferrous scrap metal facility to the present day. Calbag purchases, sorts, and packages nonferrous scrap metal for resale. No fabrication is performed onsite and all activities are performed inside the warehouse on paved surfaces. The 0.9-acre Site consists of an approximately 30,000-square foot building constructed of wood and concrete, while areas outside of the building are used for parking and loading docks. There are no catch basins on site which connect to local storm sewers, and surface drainage ultimately discharges to offsite catch basins and then to the Willamette River. No sumps or like features are known to be present within the site building.

Geology and Hydrogeology

The site and surrounding area are located on a geomorphic terrace situated along the western margin of the Willamette River. The terrace is formed by Quaternary sedimentary flood deposits and Pleistocene fine-grained geologic units of coarse sand to silt. The Site is directly underlain mainly by Pleistocene flood deposits with a thin veneer of artificial fill at the ground surface. Investigations at the Site encountered approximately 1 foot of fill, overlying clayey silt to about 12 feet, and silty sand with lenses of gravel to 55 feet below ground surface (bgs).

Site elevations are approximately 65 to 68 feet above mean sea level (MSL), with land sloping to the northeast. The Willamette River is the closest surface water body, located approximately ½ mile to the northeast. Three site monitoring wells measured shallow ground water at depths ranging from 47-52 feet bgs. The estimated groundwater flow direction, based on monitoring well measurements, is to the north-northwest, towards the Willamette River.

Environmental Investigations

The ICP Report cited the May 2009 Environmental Site Assessment which included boring and monitoring well installations. ICP Report Figures 1 through 6 provides locations for site investigation activities. Tables 2 and 3 provide analytical results of soil and groundwater sampling completed at the site between 2008 and 2010. Tables 4 and 5 provide soil and groundwater maximum detected chemicals compared to relevant Risk Based Concentrations (DEQ RBCs).

Three soil borings (B-7, B-8, and B-9) and three monitoring wells (MW-4, MW-5, and MW-6) were installed in 2008 and 2009. MW-5 was installed in boring B-8 and MW-6 was installed in boring B-9. B-9/MW-6 and B-7 are located within the site building, and were apparently located to assess potential impacts from ongoing scrap operations within the building. MW-4 and B-8/MW-5 are located outside (immediately east) of the building, near the eastern site boundary. Soil samples were collected during boring installation and groundwater sampling was performed in November 2008, February 2009, and March 2010. The contaminants of interest (COIs) for surface soil, subsurface soil, and groundwater include petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), metals, and pesticides. Soil investigation consisted of the advancement of four soil borings to a maximum depth of 60-feet bgs at the site, and collection of twelve soil samples as indicated on Table 3 for analysis. The groundwater investigation consisted of sampling of the three site wells on two occasions and is presented in Tables 2, 3, and 5.

As shown on Table 4, no analytical soil results for COIs exceeded screening levels for relevant receptors (occupational workers) with the exception of soil sample B7-S-3 collected from below the site building floor. Analytical results from soil sample B7-S-3, collected from three feet bgs, modestly exceeded benzo[a]pyrene and dibenz[a,h]anthracene risk-based concentration (RBC) levels for the occupational worker pathway. The elevated levels of PAHs in this soil sample are suspected to be from historical operations.

No analytical groundwater results exceeded relevant human health screening levels. Groundwater sample analysis included the following constituents: petroleum hydrocarbons, PAHs, PCBs, VOCs, metals, and pesticides. Groundwater concentrations were also compared with ecological screening level values (SLVs) even though a complete pathway to surface water is not expected to exist due to the low level of total metal exceedences and distance of approximately 1/2 mile from the Willamette River. SLVs were exceeded for total metals chromium, copper, lead, and zinc. Dissolved metals analysis concentrations did not exceed SLVs.

Conceptual Site Model and Beneficial Land Use Determination

A Conceptual Site Model (CSM) for the site was developed, based in part on evaluations of beneficial land use and beneficial water use. The current and likely future land use for the Site is expected to be consistent with the current zoning designation of heavy industrial use. Beneficial water use is limited to industrial use within the Locality of Facility (LOF). The LOF is considered to be the site boundary based on the results of soil and ground water analytical results that showed no contamination impact beyond the site boundary. There is no use of groundwater for drinking or other purposes in the immediate site vicinity (within ¼ mile radius). The primary identified "beneficial use" of groundwater outside the LOF is recharge of Willamette River and limited industrial use. As the site is almost completed paved, there is no significant ecological habitat.

The following are the identified current and potential future human receptors and exposure pathways for the site:
Occupational worker – Incidental ingestion, dermal, and inhalation exposure to soil. Indoor and outdoor vapor transport from groundwater.
Construction worker - Incidental ingestion, dermal, and inhalation exposure to soil. Dermal and inhalation exposure to groundwater.
Excavation worker - Incidental ingestion, dermal, and inhalation exposure to soil. Dermal and inhalation exposure to groundwater.

Risk Assessment

A risk assessment evaluation was completed based on the findings of the reports discussed above and conclusions summarized as follows:

- The LOF is identified as the site property boundary for soil contamination and potential groundwater plume impacts. DEQ agreed with this determination because outside of PAHs detections at a single location, no significant soil or ground water impacts were observed at the site. A Level 1 Ecological Risk Assessment (ERA) was performed in accordance with DEQ's 1998 guidance. The assessment did not indicate the presence of on-site ecologically important species or habitat within the LOF.

- A beneficial water use determination was performed, which concluded that there is little potential for current use of shallow site groundwater for human consumption within the LOF due to availability of public water supplies. Water uses include industrial ground water wells, and recharge of Willamette River and are found greater than ¼ mile radius from the Site.

- The CSM identified the site and adjacent properties to be zoned industrial. Land use for the area is expected to remain the same in the future. The CSM identified the following exposure pathways: current or future occupational worker exposure to soil and vapors from groundwater, and construction/excavation worker exposure to soil and groundwater.

- Low levels of COIs were detected in some surface/subsurface soils and shallow groundwater at the Site. COIs detected in ground water included VOCs and metals. PAHS were not detected in ground water above detection limits. Total metals were detected in one ground water sample exceeding ecological SLVs but dissolved metals detections were below SLVS. Low levels of VOCs were also detected in water samples that were below RBCs and SLVs. COIs detected in soil include arsenic, barium, chromium, lead, and PAHs. Only PAHs exceeded relevant screening levels: analytical results from one soil sample (B7-S-3) from three feet bgs exceeded two PAH RBCs by a factor of two for the occupational worker pathway (Table 4). PAH concentrations at the other three soil sample locations were either non-detect or just above the detection limit. Given the small number of soil samples collected, an exposure point concentration using an upper confidence limit on the arithmetic mean concentration for the site-wide exposure unit cannot be calculated. The elevated levels of PAHs in soil are suspected to be from historical operations. Current exposure to PAHs in surficial soils is limited due to extensive paving, small area of soil impact, and limited mobility to ground water.

Conclusions and Recommendations

The Calbag Metals Site at 2500 NW Nicolai Street has not performed a Source Control Evaluation (SCE). Given that surface drainage on-site ultimately discharge to the Willamette River and as a site located within the Portland Harbor Superfund study area basin, a SCE will need to be completed for the site. DEQ has requested additional information regarding site stormwater drainage and will determine what level of SCE is needed.

With one exception, contaminant concentrations detected in soils and groundwater are below relevant risk criteria. The one exceedance represents only a modest exceedance of DEQ RBCs, and is present below the site building. Given the exceedance, and the acknowledgement by DEQ that the amount of soil sampling completed at the site is limited, DEQ recommends that any future ground-disturbing work on the site should include soil screening, testing, and proper management to protect site workers and determine appropriate management for any soil that might be removed from the site.

Significant groundwater impacts were not observed at the site, and the beneficial water use determination did not identify any use of shallow groundwater in the shallow ground water is not currently used and future use is unlikely due to existing zoning and city water availability. The current and future use of ground water as a drinking water source is unlikely. Groundwater therefore does not appear to be a significant concern at the site. It is noted by DEQ that groundwater wells at the site are located along the site eastern margin. Given the surmised groundwater flow direction to the north, these are not ideally located for monitoring potential impacts to groundwater from site-related activities. Given the sum of information regarding the site, they are nevertheless considered sufficient.

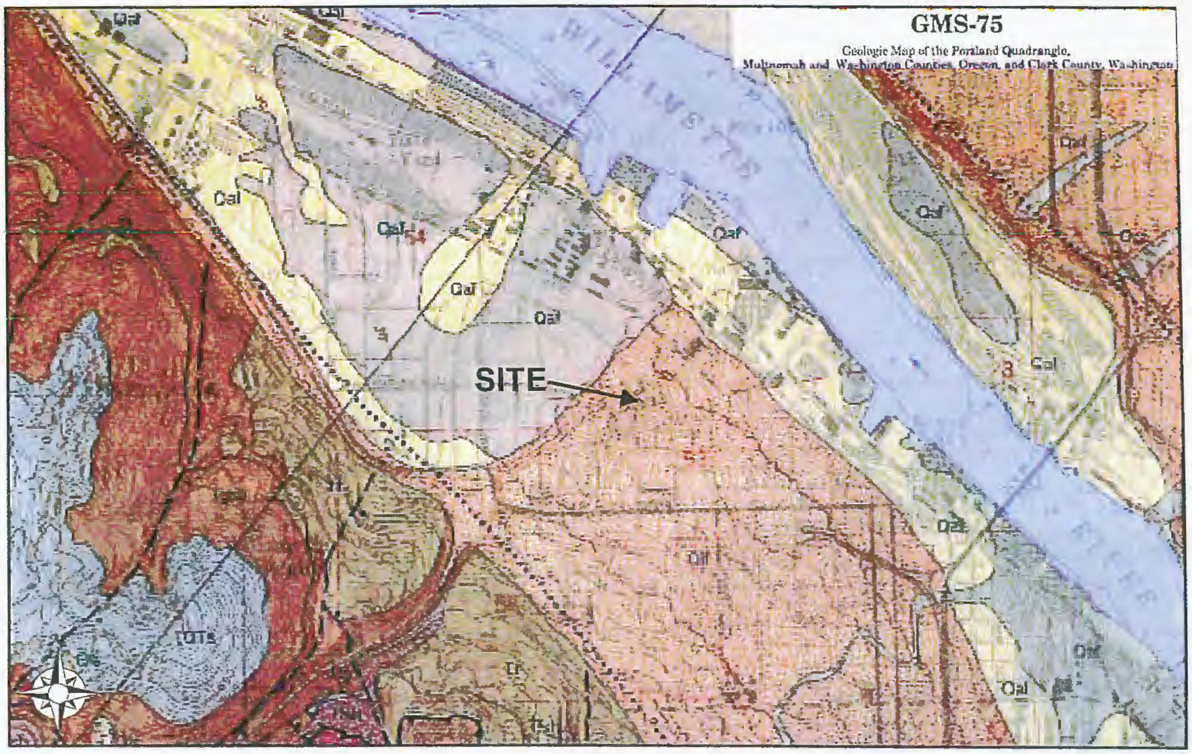
Based on the above information, DEQ concludes that no further action is required to address environmental contamination at the Site .

References

Independent Cleanup Pathway Final Report, November 2010, GeoPro LLC
Environmental Site Assessment Subsurface, May 2009, GeoPro LLC

Figure 1 – Location Map, Portland, Oregon

Figure 2 – Adjacent Properties, NW Nicolai St., Portland, Oregon



Legend

Qaf — **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit Qaf is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal — **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit Qal reaches maximum thickness of 45 m

Qff — **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit Qff reaches maximum thickness of 30 to 40 m. Unit Qff is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 3 – Geology Map, Northwest Portland, Oregon

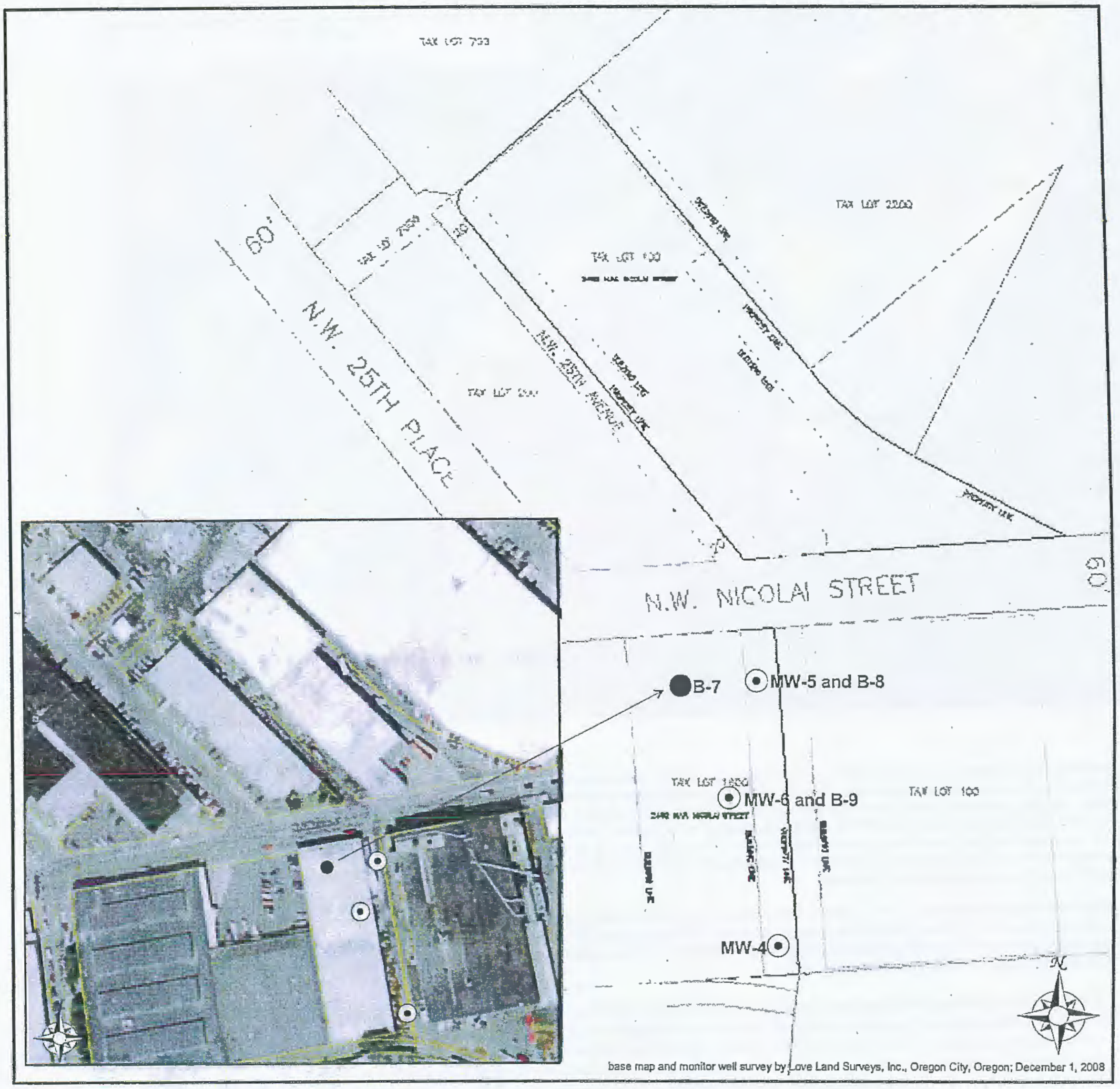


Figure 4 – Monitoring Well Locations

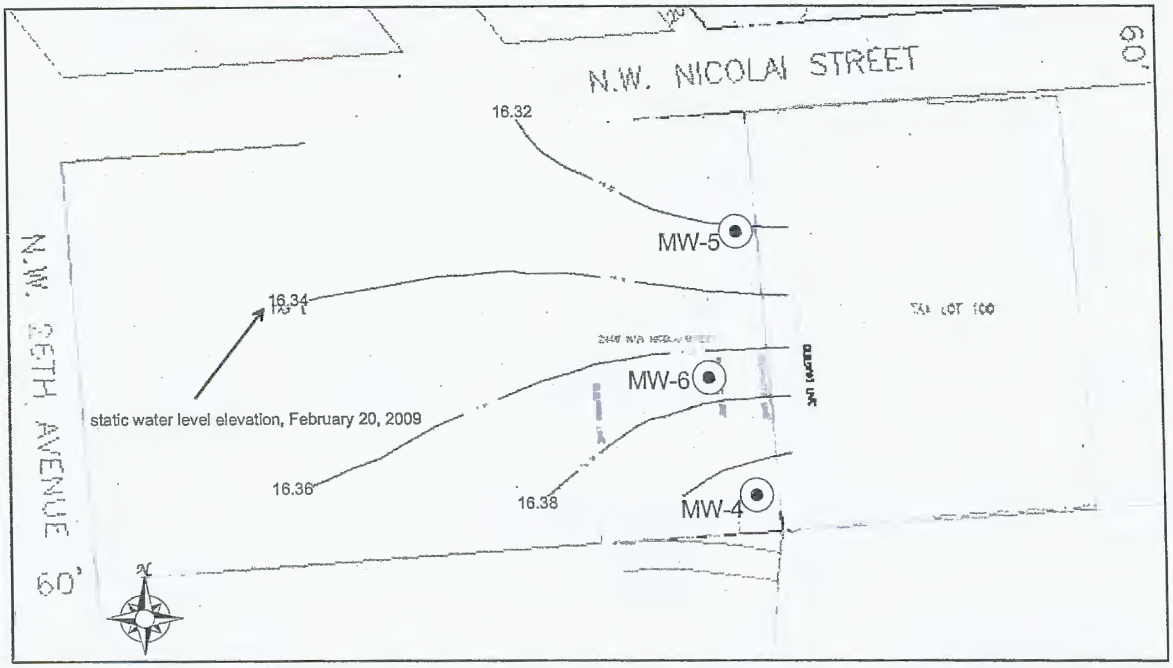


Figure 5 – Groundwater Flow Direction, February 20, 2009

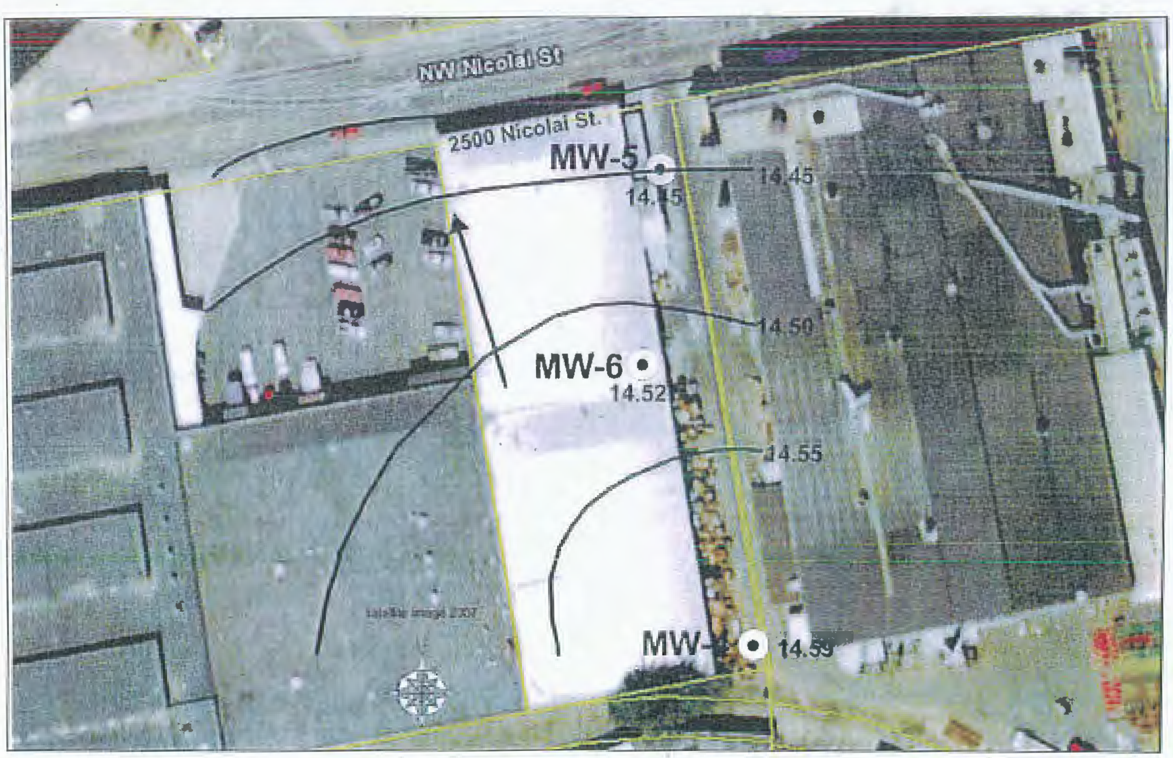


Figure 6 – Groundwater Flow Direction, March 22 and 30, 2010

Table 2 - Groundwater Analyses Monitor Wells

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
METALS-TOTAL (EPA 6010B/7471A)							
Antimony	1600	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	<3.3	6.2	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	<11	<11	<11	<11	<11	<11
Cadmium	2.2	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium (VI)	11	<11	24	<11	<11	<11	<11
Copper	9	<11	28	<11	<11	<11	<11
Lead	2.5	<1.1	9.7	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	<22	25	<22	<22	<22	<22
Selenium	5	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12	<11	<11	<11	<11	<11	<11
Thallium	40	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120	<28	160	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)							
Antimony	1600	<5		<5		<5	
Arsenic	150	<3		<3		<3	
Beryllium	5.3	<10		<10		<10	
Cadmium	2.2	<4		<4		<4	
Chromium (total)	11	<10		<10		<10	
Copper	9	<10		<10		<10	

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Lead	2.5	<1		<1		<1	
Mercury	0.77	<0.5		<0.5		<0.5	
Nickel	52	<20		<20		<20	
Selenium	5	<5		<5		<5	
Silver	0.12	<10		<10		<10	
Thallium	40	<5		<5		<5	
Zinc	120	<50		<50		<50	
PCBs AROCLORS (EPA 8082)							
Aroclor 1016		<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)							
alpha-BHC	2.2	<0.0047		<0.0047		<0.0047	
beta-BHC	2.2	<0.0047		<0.0047		<0.0047	
delta-BHC		<0.0047		<0.0047		<0.0047	
gamma-BHC (Lindane)	0.052	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	<0.0047		<0.0047		<0.0047	
Aldrin	0.06	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	<0.0047		<0.0047		<0.0047	

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
alpha-Chlordane	0.0043	<0.0047		<0.0047		<0.0047	
4,4'-DDE		<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	<0.0047		<0.0047		<0.0047	
Endrin	0.036	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde		<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03	<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate		<0.0047		<0.0047		<0.0047	
Endrin Ketone		<0.019		<0.019		<0.019	
Toxaphene	0.0002	<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)							
1,1,1,2-Tetrachloroethane	186	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrachoroethane	2200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
1,2-Dibromo-3-chloropropane		<1	<1	<1	<1	<1	<1
1,2-Dibromoethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	20000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)		<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4760	<1	<1	<1	<1	<1	<1
2-Chlorotoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99	<2	<2	<2	<2	<2	<2
4-Chlorotoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1500	<5	<5	<5	<5	<5	<5
Benzene	130	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromobenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		<1	<1	<1	<1	<1	<1
Brom omethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Tetrachloride	74	<0.2	<0.2	<0.2	<0.2	0.35	<0.2
Chlorethane		<1	<1	<1	<1	<1	<1
Chlorobenzene	50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Chloroform	1240	<0.2	1.2	<0.2	3.2	<0.2	<0.2
Chloromethane		<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethylene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene							
Hexachlorobutadiene	9.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)		<1	<1	<1	<1	<1	<1
Isopropylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2200	<1	<1	<1	<1	<1	<1
Methyt-Butyl Ether		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone		<2	<2	<2	<2	<2	<2
Naphthalene	620	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		<0.2	<0.2	<0.2	<0.2	<0.2	0.22
p-Isopropyltoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethene	840	0.3	<0.2	<0.2	<0.2	0.21	<0.2

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Toluene	9.8	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21900	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16	<2	<2	<2	<2	<2	<2
Vinyl Chloride		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)							
Naphthalene	620	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
2-Methylnaphthalene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
1-Methylnaphthalene	201	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Acenaphthylene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Acenpththene	520	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Fluorene	3.9	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Phenanthrene	6.3	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Anthracene	13	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Fluoranthene	6.16	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Pyrene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Benzo(a)anthracene	0.027	<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Chrysene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(b)fluoranthene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(k)fluoranthene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(a)pyrene	0.014	<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Ideno(1,2,3-c,d)pyrene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Dibenz(a,h)anthracene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(g,h,i)perylene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
PETROLEUM HYDROCARBONS							
Diesel Range (NWTPH-Dx)		<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)		<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)		<5200		<5200		<5200	
Total Organic Carbon			<1000		<1000		<1000

Notes:
1Freshwater aquatic screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998. Blank cell means no criterion available.
[2]Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.
[3]Blank cells mean not analyzed.
Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value. Bolded values are concentrations detected above the respective PQL. Grey shaded cells are PQLs greater than DEQ SLV; Yellow shaded cells are detected concentrations that exceed DEQ SLVs.

Table 3 – Sample Analyses Soil and Groundwater

			SOIL SAMPLE NUMBERS													GROUNDWATER SAMPLES		
CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4-S-3[3]	MW4-S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg																
Antimony	64	410[a]													6	<5.6	<5.6	<5.6
Arsenic	7	1.7	<13	<14	<12	<13	<13	<13	<13	<13	<14	<12	<13	<14	0.045	<3.3	<3.3	<3.3
Beryllium	na	2000													na	<11	<11	<11
Barium	na	>100x 10^3	170	190	130	250	180	150	270	170	150	180	260	180	na			
Cadmium	1	510	<0.65	<0.68	<0.61	<0.63	<0.65	<0.67	<0.67	<0.68	<0.69	<0.59	<0.66	<0.68	0.094	<4.4	<4.4	<4.4
Chromium (total)	111	180	23	20	13	24	23	25	26	18	22	18	25	18	100	<11	<11	<11
Copper	149	38000													2.7	<11	<11	<11
Lead	17	800	9.6	12	<6.1	61	12	10	14	15	12	67	17	12	0.54	<1.1	<1.1	<1.1
Mercury	0.07	310	<0.32	<0.34	<0.3	<0.31	<0.32	<0.33	<0.33	<0.34	<0.35	<0.29	<0.33	<0.34	0.77	<0.5	<0.5	<0.5
Nickel	48.6	20000													16	<22	<22	<22
Selenium	2	5100	<13	<14	<12	<13	<13	<13	<13	<14	<14	<12	<13	<14	5	<5.6	<5.6	<5.6
Silver	5	5100	<0.65	<0.68	<0.61	<0.63	<0.65	<0.67	<0.67	<0.68	<0.69	<0.59	<0.66	<0.68	0.12	<11	<11	<11
Thallium	na	82[a]													na	<5.6	<5.6	<5.6
Zinc	459	310[a]													36	<28	<28	<28
METALS-DISSOLVED (EPA 200.8/7470A)	na																	
Antimony															6	<5	<5	<5
Arsenic															0.045	<3	<3	<3
Beryllium															na	<10	<10	<10
Barium															na			
Cadmium															0.094	<4	<4	<4

CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
Chromium (total)															100	<10	<10	<10
Copper															2.7	<10	<10	<10
Lead															0.54	<1	<1	<1
Mercury															0.77	<0.5	<0.5	<0.5
Nickel															16	<20	<20	<20
Selenium															5	<5	<5	<5
Silver															0.12	<10	<10	<10
Thallium															na	<5	<5	<5
Zinc															36	<50	<50	<50
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg																
Aroclor 1016	530	21000[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.96	<0.047	<0.047	<0.047
Aroclor 1221		620[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1232		620[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1242		740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1248	1500	740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1254	300	740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.033	<0.047	<0.047	<0.047
Aroclor 1260	200	740[a]	<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	0.034	<0.047	<0.047	<0.047
Aroclor 1262			<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	na	<0.047	<0.047	<0.047
Aroclor 1268			<65	<68	<61	<63	<65	<67	<67	<68	<69	<59	<66	<68	na	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg																	
alpha-BHC															0.0049	<0.0047	<0.0047	<0.047
beta-BHC															0.017	<0.0047	<0.0047	<0.047
delta-BHC															0.037	<0.0047	<0.0047	<0.047

CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
gamma-BHC (Lindane)	4.99														0.052	<0.0047	<0.0047	<0.047
Heptachlor	10														0.000079	<0.0047	<0.0047	<0.047
Aldrin	40														0.00005	<0.0047	<0.0047	<0.047
Heptachlor Expoxide	16														0.000039	<0.0047	<0.0047	<0.047
gamma-Chlordane	0.37														0.00081	<0.0047	<0.0047	<0.047
alpha-Chlordane	0.37														0.00081	<0.0047	<0.0047	<0.047
4,4'-DDE	0.33														0.00022	<0.0047	<0.0047	<0.047
4,4'-DDD	0.33														0.00031	<0.0047	<0.0047	<0.047
4,4'-DDT	0.33														0.00022	<0.0047	<0.0047	<0.047
Dieldrin	0.0081														0.000054	<0.0047	<0.0047	<0.047
Endosulfan I															0.051	<0.0047	<0.0047	<0.047
Endosulfan II															0.051	<0.0047	<0.0047	<0.047
Endrin	207														0.036	<0.0047	<0.0047	<0.047
Endrin Aldehyde															na	<0.0047	<0.0047	<0.047
Methoxychlor															0.03	<0.0094	<0.0094	<0.0094
Endosulfan Sulfate															89	<0.0047	<0.0047	<0.047
Endrin Ketone															na	<0.019	<0.019	<0.019
Toxaphene															0.0002	<0.047	<0.047	<0.047
VOLATILE ORGANIC CHEMICALS (EPA 8260B)	ug/kg																	
1,1,1,2-Tetrachloroethane															2.5	<0.2	<0.2	<0.2
1,1,1-Trichloroethane															11	<0.2	<0.2	<0.2

CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4-S-3[3]	MW4-S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
1,1,2,2-Tetrachoroethane															0.33	<0.2	<0.2	<0.2
1,1,2-Trichoroethane															1.2	<0.2	<0.2	<0.2
1,1-Dichloroethane															47	<0.2	<0.2	<0.2
1,1-Dichloroethene															na	<0.2	<0.2	<0.2
1,1-Dichloropropene															na	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene															na	<0.2	<0.2	<0.2
1,2,3-Trichloropropane															0.0095	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	9200														8.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene															na	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane															na	<1	<1	<1
1,2-Dibromoethane															0.033	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	1700														49	<0.2	<0.2	<0.2
1,2-Dichloroethane															0.73	<0.2	<0.2	<0.2
1,2-Dichloropropane	300														0.97	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene															na	<0.2	<0.2	<0.2
1,3-Dichlorobenzene															14	<0.2	<0.2	<0.2
1,3-Dichloropropane															na	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	300														2.8	<0.2	<0.2	<0.2
2,2-Dichloropropane															na	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)															7100	<5	<5	<5

CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4- S-11	B7- S-03	B7- S-06	B7- S-09	B-8- 4	B-8- 8	B-8- 12	B9- S-03	B9- S-06	B9- S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
2-Chloroethyl Vinyl Ether															na	<1	<1	<1
2-Chlorotoluene															na	<0.2	<0.2	<0.2
2-Hexanone															99	<2	<2	<2
4-Chlorotoluene															na	<0.2	<0.2	<0.2
Acetone															1500	<5	<5	<5
Benzene															1.2	<0.2	<0.2	<0.2
Bromobenzene															na	<0.2	<0.2	<0.2
Bromochloromet hane															na	<0.2	<0.2	<0.2
Bromodichlorom ethane															1.1	<0.2	<0.2	<0.2
Bromoform															8.5	<1	<1	<1
Bromomethane															8.7	<0.2	<0.2	<0.2
Carbon Disulfide															0.92	<0.2	<0.2	<0.2
Carbon Tetrachloride															0.51	<0.2	<0.2	<0.2
Chlorethane															23	<1	<1	<1
Chlorobenzene															50	<0.2	<0.2	<0.2
Chloroform															0.17	<0.2	<0.2	<0.2
Chloromethane															2.1	<1	<1	<1
cis-1,2-Dichloroethylene															61	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene															0.055	<0.2	<0.2	<0.2
Dibromochlorom ethane															na	<0.2	<0.2	<0.2
Dibromomethane															61	<0.2	<0.2	<0.2
Dichlorodifluoro methane															390	<0.2	<0.2	<0.2
Ethylbenzene															7.3	<0.2	<0.2	<0.2
Hexachlorobenze ne	19														0.00029			

CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
Hexachlorobutadiene	600														0.86	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)															na	<1	<1	<1
Isopropylbenzene															660	<0.2	<0.2	<0.2
m,p-Xylene															1.8	<0.4	<0.4	<0.4
Methylene Chloride															8.9	<1	<1	<1
Methyt-Butyl Ether															37	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone															na	<0.2	<0.2	<0.2
Naphthalene															0.2	<1	<1	<1
n-Butylbenzene															na	<0.2	<0.2	<0.2
n-Propylbenzene															na	<0.2	<0.2	<0.2
o-Xylene															13	<0.2	<0.2	<0.2
p-Isopropyltoluene															na	<0.2	<0.2	<0.2
sec-Butylbenzene															na	<0.2	<0.2	<0.2
Styrene															100	<0.2	<0.2	<0.2
tert-Butylbenzene															na	<0.2	<0.2	<0.2
Tetrachloroethene -	500														0.12	0.3	<0.2	0.21
Toluene															9.8	<1	<1	<1
trans-1,2-Dichloroethene															110	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene															0.055	<0.2	<0.2	<0.2
Trichloroethene	2100														0.17	<0.2	<0.2	<0.2
Trichlorofluoromethane															1300	<0.2	<0.2	<0.2
Vinyl Acetate															16	<2	<2	<2
Vinyl Chloride															0.015	<0.2	<0.2	<0.2

CHEMICALS	Soil SLV[1]	OCC RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4-S-11	B7-S-03	B7-S-06	B7-S-09	B-8-4	B-8-8	B-8-12	B9-S-03	B9-S-06	B9-S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg																
Naphthalene	561	22000	<8.7	<9.1	<8.1	31	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
2-Methylnaphthalene	200		<8.7	<9.1	<8.1	15	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
1-Methylnaphthalene	na		<8.7	<9.1	<8.1	10	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	na	<0.095	<0.095	<0.094
Acenaphthylene	200		<8.7	<9.1	<8.1	130	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Acenpththene	300	41x10[6]	<8.7	<9.1	<8.1	<8.3	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Fluorene	536	35x10[6]	<8.7	<9.1	<8.1	16	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Phenanthrene	1170		<8.7	<9.1	<8.1	260	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Anthracene	845		<8.7	<9.1	<8.1	120	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.095	<0.095	<0.094
Fluoranthene	2230	29x10[6]	<8.7	<9.1	<8.1	550	<8.7	<8.9	<8.9	<9	<9.3	10	<8.8	<9	0.2	<0.095	<0.095	<0.094
Pyrene	1520	21x10[6]	<8.7	<9.1	<8.1	530	<8.7	<8.9	<8.9	<9	<9.3	12	<8.8	<9	0.2	<0.095	<0.095	<0.094
Benzo(a)anthracene	1050	2700	<8.7	<9.1	<8.1	270	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.18	<0.0095	<0.0095	<0.0094
Chrysene	1290	270000	<8.7	<9.1	<8.1	480	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.18	<0.0095	<0.0095	<0.0094
Benzo(b)fluoranthene		2700	<8.7	<9.1	<8.1	1400	<8.7	<8.9	<8.9	<9	<9.3	9.1	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Benzo(k)fluoranthene	13000	27000	<8.7	<9.1	<8.1	640	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Benzo(a)pyrene	1450	270	<8.7	<9.1	<8.1	640	<8.7	<8.9	<8.9	<9	<9.3	8.1	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Ideno(1,2,3-c,d)pyrene	100	2700	<8.7	<9.1	<8.1	1600	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Dibenz(a,h)anthracene	1300	270	<8.7	<9.1	<8.1	620	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.018	<0.0095	<0.0095	<0.0094
Benzo(g,h,i)perylene	300		<8.7	<9.1	<8.1	2500	<8.7	<8.9	<8.9	<9	<9.3	<7.8	<8.8	<9	0.2	<0.0095	<0.0095	<0.0094

CHEMICALS	**Soil** SLV[1]	OCC RBC[2]	MW4 -S-3[3]	MW4 -S-6	MW4- S-11	B7- S-03	B7- S-06	B7- S-09	B-8- 4	B-8- 8	B-8- 12	B9- S-03	B9- S-06	B9- S-09	Ground water SLV[4] ug/l	MW-4 45-55 ug/l[5]	MW-5 40-50 ug/l	MW-6 45-55 ug/l
PETROLEUM HYDROCARBONS	ug/kg																	
Diesel Range (NWTPH-Dx)						<31x 10^3										<250	<250	<250
Lube Oil Range (NWTPH-Dx)						<63 x10^3										<400	<400	<400
Gasoline (NWTPH-HCID)	22x10^6					<25 x10^3						<24 x10^3						
Diesel Fuel (NWTPH-HCID)	70x10^6					<63 x10^3						<59 x10^3						
Lube Oil (NWTPH-HCID)						<130 x10^3						<120 x10^3						
TPH-Gas (NWTPH-Gx)																<100	<100	<100
Oil & Grease (EPA 1664)																<5200	<5200	<5200

Notes:

[1] *Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.*

[2] *DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by (a)*

[3] *Soil sample from boring for monitoring well; example MW4-S-3 is soil sample from MW4 boring taken from 3 feet depth below ground surface.*

[4]*Screening Level Values (SLVs) for water from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted yellow on the table.*

[5]*Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.*

Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value.

***Bolded** values are concentrations detected above the respective PQL.*

Grey shaded cells are PQLs greater than JSCS SLV.

Yellow shaded cells are detected concentrations that exceed JSCS screening level values.

Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

Table 4
Screening of Maximum Chemical Concentrations in Soil

			DEQ Risk-Based Concentrations (RBCs)				
Chemical	**Sample**	**Max Conc.**	**RBCss Occup.**	**RBCss Construct.**	**RBCss Excavation**	**RBCso Occup.**	**RBCsi Occup.**
Concentration in mg/kg							
Arsenic	MW4-S-6	<14	1.7	13	370	NV	NV
Barium	B7-S-03	250	-	62,000	-	NV	NV
Chromium	B8-4	26	180	920	26,000	NV	NV
Lead	B9-S-03	67	800	800	800	NV	NV
Concentration in μg/kg							
Acenaphthylene	B7-S-03	130	-	19,000,000	-	NV	NV
Anthracene	B7-S-03	120	-	93,000,000	-	NV	NV
Benzo[a]anthracene	B7-S-03	270	2,700	21,000	590,000	NV	NV
Benzo[b]fluoranthene	B7-S-03	1,400	2,700	21,000	590,000	NV	NV
Benzo[k]fluoranthene	B7-S-03	640	27,000	210,000	5,900,00	NV	NV
Benzo[g,h,i]perylene	B7-S-03	2,500	-	-	-	NV	NV
Benzo[a]pyrene	B7-S-03	640	**270**	2,100	59,000	NV	NV
Chrysene	B7-S-03	480	270,000	2,100,000	59,000,000	NV	NV
Dibenz[a,h]anthracene	B7-S-03	620	**270**	2,100	59,000	NV	NV
Fluoranthene	B7-S-03	550	29,000,000	8,900,000	-	NV	NV
Fluorene	B7-S-03	16	41,000,000	12,000,000	-	NV	NV
Indeno[1,2,3-c,d]pyrene	B7-S-03	1,600	2,700	21,000	590,000	NV	NV
1-Methylnaphthalene	B7-S-03	10	-	-	-	NV	NV
2-Methylnaphthalene	B7-S-03	15	-	-	-	NV	NV
Naphthalene	B7-S-03	31	23,000	580,000	16,000,000	27,000	99,000
Phenanthrene	B7-S-03	260	-	-	-	NV	NV
Pyrene	B7-S-03	530	21,000,000	6,700,000	-	NV	NV

Notes:
Corrected from Table 1 of the November 2010 ICP Report.
RBCss = RBC for Soil Ingestion, Dermal Contact, and Inhalation Pathways
RBCso = RBC for Volatilization to Outdoor Air Pathway
RBCsi = RBC for Vapor Intrusion into Buildings Pathway.
Yellow shaded cells indicate maximum soil concentration exceeds RBC.
Bold values indicate RBCs that are exceeded.
NV = not volatile.

Table 5
Screening of Maximum Chemical Concentrations in Groundwater

			DEQ Risk-Based Concentrations (RBCs) (µg/L)			DEQ
Chemical	**Sample**	**Max Conc. (µg/L)**	**RBCwo Occupational**	**RBCwi Occupational**	**RBCwe Excav.**	**SLV (µg/L)**
Total Metals						
Arsenic	MW-4	6.2	NV	NV	NV	150
Chromium	MW-4	24	NV	NV	NV	**11**
Copper	MW-4	28	NV	NV	NV	**9**
Lead	MW-4	9.7	NV	NV	NV	**2.5**
Nickel	MW-4	25	NV	NV	NV	52
Zinc	MW-4	160	NV	NV	NV	**120**
Carbon Tetrachloride	MW-6	0.35	2,200	320	770	74
Chloroform	MW-5	3.2	5,500	1,200	720	1,240
o-Xylene	MW-6	0.22	>S	>S	23,000	13
Tetrachloroethene	MW-4	0.3	9,200	1,400	240	840

Notes:
Corrected from Table 3 of the November 2010 ICP Report.
RBCwo = RBC for Volatilization to Outdoor Air Pathway
RBCwi = RBC for Vapor Intrusion into Buildings Pathway
RBCwe = RBC for Groundwater in Excavation Pathway.
SLV = DEQ ecological screening level value. SLV for xylene is for mixed xylenes.
Yellow shaded cells indicate maximum groundwater concentration exceeds screening level.
Bold values indicate screening values that are exceeded.
NV = not volatile
>S = screening level is greater than solubility limit

Appendix D

Environmental Site Assessment Subsurface Report

2495 NW Nicolai Street, May 2009

ENVIRONMENTAL SITE ASSESSMENT SUBSURFACE

CALBAG FACILITY
2495 NW NICOLAI STREET
PORTLAND, OREGON

Prepared for

Mr. Jeffrey Wolfstone, Attorney

On Behalf of

His Clients

Prepared by

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May 2009

Contents

Figures

Tables

1 INTRODUCTION

1.1 Purpose

This Report is CONFIDENTIAL and prepared for the exclusive use of the Client.

This Report is prepared for Mr. Jeffrey Wolfstone, Attorney, on behalf of his clients for their property located at 2495 NW Nicolai Street, Portland, Oregon ("Site"). This Environmental Site Assessment ("ESA ") is based on recommendations contained in a Phase I ESA dated August 29, 2008.

The purpose of this subsurface environmental assessment is to evaluate possible recognized environmental conditions for the purpose of providing sufficient information regarding the nature and extent of potential contamination to assist in making informed business decisions about the Site. This Report cannot eliminate all uncertainties regarding chemical analysis that may or may not represent surface and subsurface conditions. Additional assessment may be able to reduce any uncertainty.

1.2 Scope of Services

This work is performed to determine whether contaminants, primarily metals, have impacted shallow soil and groundwater within the Site. The following are specific objectives:

1. Perform a hydrogeologic characterization of shallow groundwater within the property by installing groundwater monitor wells and analyzing groundwater for certain chemicals.
2. Evaluate the potential for contaminated soil within the Site by analyzing selected soil samples within the Site and beneath a building.

2 BACKGROUND

2.1 Site Description

The Site is located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1) which includes a building housing corporate offices, storage and a processing warehouse. The building covers 67,281 square feet and consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof . The Site also contains an open shed with a metal roof.

The Site is operated by Calbag Metals Company ("Calbag"). Calbag is a nonferrous scrap metal company which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals essentially include aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or PCBs. Fabrication does not occur at the Site.

2.2 Physical Setting

The Site consists of 1.68 acres developed with the industrial building, and 0.23 acres of undeveloped land. The ground surface at the site slopes gradually to the northeast. Ground cover consists primarily of a building, asphalt parking, and a paved driving and staging area north of the building. The Site can be accessed from the south via entrances from N.W. Nicolai St., and from the west via an entrance from N.W. 25th Place. The site is zoned industrial.

The Site is located within Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). Quaternary alluvium deposits of river deposits of silt, sand and organic-rich clay separate the Site from the Willamette River. The geologic map depicts Holocene artificial fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill ends that were deposited to the north of the Site.

2.3 Site History

Historical records indicate the building on the Site was constructed on undeveloped land in 1948, and has been occupied since that time. A Sanborn map dated 1950 describes the property adjacent to the building as a "Junk Yard". A Sanborn map dated 1969 describes the occupant of the building as "California Bag & Metal Company Warehouse". Additional site history is described in the Phase I ESA.

2.4 Adjacent Property Use

Adjacent properties are shown in Figure 3.

Madden Fabrication, located northwest and adjacent to the Northwest Ancillary Site, is a metals fabrication facility which provides custom ornamental steel work combining an element of rolling, laser cutting and casting work. The facility also works with carbon steel, stainless steel, aluminum, nickel alloys, and also has the capability to work with many exotic metals.

Rose City Textiles, located west and adjacent to the Site, is a fabric warehouse in which fabric is sized, cut and delivered.

Empty warehouses occupy the property east and adjacent to the Site. An office, occupied by Color Technology is attached to the southeastern portion of the warehouses.

Warehouses and a parking lot cover the area north of the Site and is part of the Guilds Lake Remediation Project. This property was the location of the Guilds Lake incinerator and landfill and is owned and managed by the City of Portland. The area has been remediated of previous known hazardous substances including petroleum, chromium, lead, arsenic and cadmium. The Oregon Department of Environmental Quality ("DEQ") approved a no further remediation action in 1998, although long term methane and groundwater monitoring is ongoing.

2.5 Previous Assessments

A Phase I Environmental Site Assessment ("ESA-I") was prepared for the Site by Blue Mountain Environmental Consulting ("BMEC") on August 29, 2008.

The ES-I report states that the identification of recognized environmental conditions in connection with the Site may impose an environmental liability on owners or operators of the site, reduce the value of the site, or restrict the use or marketability of the site, and therefore, further investigation may be warranted to evaluate the scope and extent of potential environmental liabilities.

Research into the areas surrounding the site indicates heavy industrial use currently and in the past. Based on the nature of operations conducted by Calbag, the ESA-I report concluded that an "investigation should be conducted to investigate soil conditions at the site." The proposed investigation was extended to include groundwater conditions.

3 FIELD ACTIVITIES

3.1 Sampling Plan

The purpose of the sampling plan is to characterize the soil and groundwater through with a series of borings. Selected borings were drilled to depths above the water table to only collect soil samples for analysis, and other borings were drilled below the water table to install monitor wells and collect soil and groundwater samples. Analytical results were then compared to appropriate screening criteria to evaluate threat to ecological and human receptors.

Borings completed to collect only soil samples are numbered B-1 through B-6. Groundwater monitoring wells are numbered MW-1 through MW-3. The drilling locations are shown in Figure 4.

The rationale for drilling locations are:

Table 1 – Drilling Location Rational

Boring/Well	Location	Objective	Sample Depths (ft)
B-1	NW 25th Place entrance	Shallow soil north of building and near northern parcel boundary	12
B-2	Within NW 25th Ave. access road west of building	Shallow soil west of building, high traffic area	3, 6, 10
B-3	Beneath 2495 building	Shallow soil interior northern	4, 6, 9
B-4	Beneath 2495 building	Shallow soil interior southern	3, 6, 9
B-5	East of building in access road	High traffic area - east	3, 6, 9.5
B-6	SE of building in access road	Southeast parcel boundary	4, 6, 9
MW-1	NW 25th Place entrance	Shallow soil and depth to groundwater (north)	3, 6, 11; 40/50
MW-2	East of building in access road	Shallow soil and depth to groundwater (east)	5, 10, 15; 39/49
MW-3	SW of building	Shallow soil and depth to groundwater (south)	3, 6, 11; 45/55

3.2 Field Methods

3.2.1 Soil Sampling Borings

Subsurface soil samples were collected during drilling of the Borings using a push probe, truck-mounted, drill rig (GeoProbe) with a hydraulically powered hammer/ram sampling device. The drill rig drove a 4-foot-long hollow steel rod into the ground for collection of soil samples.

The push probe sampler was advanced to a desired sampling depth and the drive point of the sampler was retracted. Once retracted, the push probe was advanced an additional 4 feet, thereby allowing soil to enter a 4-foot-long, 1.5-inch (inside diameter) acetate liner housed inside the casing of the sampler. After the sampler was retrieved from the boring, the soil liner was extruded from casing and the liner split using a razor knife. The samples were then placed in laboratory furnished containers and stored in iced coolers to await shipment. A geologic log was prepared describing the subsurface materials encountered, and other geologic or environmental observations.

All borings were abandoned with bentonite chips to within one foot below ground surface. All chips were hydrated for at least 1-hour prior to repair of the surface with asphalt or concrete as appropriate.

3.2.2 Monitor Well Installation

Groundwater monitor wells were drilled to about 10 feet below the estimated water table. The screen and blank well casing were constructed of two (2)-inch diameter Schedule 40, polyvinyl chloride ("PVC") flush coupled, threaded pipe. The screen was slotted at a nominal machine cut of 0.010-inch width. The filter pack consists of nominal clean graded Colorado silica #10-20 sand. Upon boring to total depth, the well casing, consisting of a threaded end cap on a 10-foot section of screen, in turn threaded fit to 10-foot sections of blank casing, were assembled and lowered to total depth. The filter pack was placed (by measuring with a weighted tape measure) into the annular space to approximately two-foot above the well screen. An aquifer seal of bentonite pellets was placed from the filter pack to about 0.5-feet depth. A surface seal of Portland Type II cement was placed from about 0.5-feet to the surface. A lockable, water tight well cover was installed on the well casing and a vault traffic box was cemented around the well at the surface.

During drilling, a geologic log was prepared describing the subsurface materials encountered as periodic grab samples from drill cuttings, depth to groundwater, and other geologic or environmental observations. Each groundwater monitoring well was installed according to Oregon Department of Water Resources regulations. The monitor well locations and elevations were surveyed accurate.

3.2.3 Soil Sampling Monitor Wells

Subsurface soil samples were collected during the drilling of the monitor wells according to method ASTM D1586-08a, “Standard Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils”. The boreholes were advanced incrementally to permit intermittent sampling at approximate 5-foot intervals or sampling when potential contamination was visible.

After the borehole was advanced to the desired depth and excessive cuttings removed, a split-barrel sampler was attached to the sampling rods. The sampler and rods were driven with a 140-pound hammer and the number of blows were counted at each 0.5-foot increment up to three 0.5-foot increments. The sampler was opened and the soil was classified according to ASTM Method D2488 “Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)” and one or more representative samples were selected. The samples were then placed in laboratory furnished containers and stored in iced coolers to await shipment. A geologic log was prepared describing the subsurface materials encountered, and any other pertinent geologic or environmental observations.

3.2.4 Groundwater Sampling

Groundwater sampling in each monitor well was conducted using low-flow purging and sampling techniques. During low-flow sampling, a pump and dedicated polyethylene tubing were lowered into the well casing and positioned toward the middle of the well screen. The pump was then turned on and the pump rate set low enough to minimize drawdown of the water level within the well. The monitor wells were purged until groundwater quality parameters were stable.

During purging, water quality parameters including temperature, pH, and conductivity were periodically monitored until stabilization of the parameters was achieved.

Turbidity was visually monitored and recorded, and was also used as an indication of when the groundwater was stable for sampling. After stabilization was reached, a groundwater sample was collected following the low-flow technique described above. Groundwater samples were prepared according to protocol established by the analytical laboratory.

A chain of custody was prepared for all samples. Appropriate decontamination procedures were followed to prevent cross contamination of the drilling equipment between boreholes, and of groundwater samples between sample depths and between boring locations. Any investigation derived waste, soil and groundwater, was collected and disposed by the drilling subcontractor.

3.3 Chemical Analyses and Methods

Metals are the main chemicals of concern based on the operations of the facilities and the nearby Guilds Lake Remediation Project. Hazardous substances previously detected in the vicinity include PCBs, general petroleum, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples were analyzed for at least constituents detected in the vicinity.

All soil samples were analyzed for polynuclear aromatic hydrocarbons ("PAHs") by EPA Method 8270C/SIM, polychlorinated biphenyls ("PCBs") by EPA Method 8082, moisture, and total Resource Conservation and Recovery Act ("RCRA") metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. Selected soil samples were additionally analyzed for NorthWest Total Petroleum Hydrocarbons ("NWTPH") Hydrocarbon Identification ("HCID") or diesel.

All groundwater samples were analyzed for gasoline, diesel, volatile organics by EPA Method 8260B, PAHS, PCBs, pesticides by EPA Method 8081A, total Priority Pollutant Metals undissolved and dissolved: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, hexane extractable material ("HEM" – oil and grease), and total organic carbon ("TOC").

4 DATA RESULTS

Data quality objectives for the environmental assessment are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in shallow groundwater and soil above detection levels and at levels that pose an unacceptable risk to direct contact, soil and aquatic receptors. Data has been compared to DEQ's Screening Level Values ("SLVs") to determine whether these levels are exceeded and to support decision-making regarding the need for further investigation.

4.1 Soil Description

Borings B-1 through B-6 generally encountered light gray fill to a depth of approximately 3 feet, then brown clayey silt to total depths of 11 to 12 feet. Boring B-5 encountered a thin, less than one-half foot thick, gravel zone near a depth of approximately 6 feet. The fill was dry and the silt ranged from damp to moist. Boring B-5 encountered a saturated zone below fill at about 3 feet which was probably due to leakage from a water line break. The line, located within a few feet from the Boring, was being repaired at the time of drilling. None of the material encountered in the borings had petroleum odors or indications of petroleum products. The Boring geologic logs are included in Appendix A.

Monitor well borings MW-1 through MW-3 encountered similar material to approximately 12 feet depth as in Borings B-1 through B-6 (see Geologic Logs, Appendix A). Below about 12 feet depth, the monitor well borings generally encountered silty, well sorted, brown fine sand to about 40 feet depth (about 46 feet depth in MW-3). Below the silty sand, each monitor well boring encountered groundwater in a sandy pebbly gravel unit, approximately 5 feet in thickness. Well sorted silty sand below the gravel was less saturated. Screens of the monitor wells are installed within the gravel zone (see Appendix B). The soil cuttings from drilling were disposed at the Hillsboro Landfill (see Appendix C).

4.2 Groundwater Description

The groundwater gradient is essentially flat, however, based on water levels measured on February 20, 2009 during sampling, the groundwater flow direction is generally west-northwest, toward Monitor Well MW-1 and in the general downstream flow direction of the Willamette River (see Figure 5). The flow direction may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. Further investigation may be required to better define the groundwater flow directions and gradients. The following Table 2 lists the elevations and surveyed locations of the monitor wells, and groundwater static water levels measured on February 20, 2009.

Table 2 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-1	56.010	55.841	691089.023	7637324.331	50	40/50	2/20/09	39.55	16.291
MW-2	60.289	60.049	691054.877	7637663.578	49.5	39.5/49.5	2/20/09	43.69	16.359
MW-3	62.943	62.567	690834.411	7637665.522	55	45/55	2/20/09	46.29	16.277

Notes:
Depths, elevations and levels in feet. Elevations referenced to NAVD 88. “SWL” = Static Water Level.
Monitor Wells installed October 31 – November 1, 2008.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008

4.3 Analytical Results

The following Tables 3 and 4 summarize analyzed constituents in soil and groundwater samples. Laboratory reports are included in Appendix D. Under the Joint Source Control Strategy (“JSCS”), DEQ is responsible for addressing upland sources that are impacting or may potentially impact the Willamette River in the Portland Harbor area. The detected concentrations are compared to Screening Level Values (“SLVs”) from DEQ’s JSCS Table 3-1, which are highlighted in orange in Table 3-1. Yellow shaded cells in Tables 3 and 4 are detected concentrations that exceed the JSCS SLVs.

Lead exceeds SLVs in soil samples from MW-1 (3 feet), MW-3 (3 feet), Boring B-3 (4 and 6 feet), and Boring B-4 (3 feet).

Cadmium exceeds SLVs in a soil sample from Boring B-4 (3 feet).

Mercury in a sample from MW-3 at 3 feet exceeds DEQ background soil values.

Table 3 – Sample Analyses Monitoring Wells

												Groundwater Samples		
CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3[3]	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[4] ug/l	MW-1 40-50 ug/l[5]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg													
Antimony	64	410[a]										6	<5.6	<5.6	<5.6
Arsenic	7	1.7	<13	<13	<13	<14	<14	<12	<12	<13	<13	0.045	<3.3	<3.3	<3.3
Beryllium	na	2000										na	<11	<11	<11
Barium	na	>100x10[3]	**190**	**170**	**200**	**160**	**150**	**120**	**200**	**170**	**150**	na			
Cadmium	1	510	<0.63	<0.66	<0.63	<0.68	<0.68	<0.58	<0.6	<0.65	<0.64	0.094	<4.4	<4.4	<4.4
Chromium (total)	111	180	**19**	**24**	**21**	**19**	**21**	**13**	**17**	**27**	**17**	100	<11	<11	<11
Copper	149	38000										2.7	<11	<11	<11
Lead	17	800	**150**	**12**	**6.5**	**14**	**8**	**6.1**	**200**	**13**	**8.1**	0.54	<1.1	<1.1	<1.1
Mercury	0.07	310	<0.32	<0.33	<0.31	<0.34	<0.34	<0.29	**0.65**	<0.32	<0.32	0.77	<0.5	<0.5	<0.5
Nickel	48.6	20000										16	<22	<22	<22
Selenium	2	5100[a]	<13	<13	<13	<14	<14	<12	<12	<13	<13	5	<5.6	<5.6	<5.6
Silver	5	5100	<0.63	<0.66	<0.63	<0.68	<0.68	<0.58	<0.6	<0.65	<0.64	0.12	<11	<11	<11
Thallium	na	82[a]										na	<5.6	<5.6	<5.6
Zinc	459	310[a]										36	<28	<28	<28
METALS-DISSOLVED (EPA 200.8/7470A)	na														
Antimony												6	<5	<5	<5
Arsenic												0.045	<3	<3	<3
Beryllium												na	<10	<10	<10
Barium												na			
Cadmium												0.094	<4	<4	<4
Chromium (total)												100	<10	<10	<10
Copper												2.7	<10	<10	<10

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Lead												0.54	<1	<1	<1
Mercury												0.77	<0.5	<0.5	<0.5
Nickel												16	<20	<20	<20
Selenium												5	<5	<5	<5
Silver												0.12	<10	<10	<10
Thallium												na	<5	<5	<5
Zinc												36	<50	<50	<50
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg													
Aroclor 1016	530	21000[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.96	<0.047	<0.047	<0.047
Aroclor 1221		620[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1232		620[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1242		740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1248	1500	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1254	300	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.033	<0.047	<0.047	<0.047
Aroclor 1260	200	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1262			<63	<66	<63	<68	<68	<58	<60	<65	<64	na			
Aroclor 1268			<63	<66	<63	<68	<68	<58	<60	<65	<64	na			
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg														
alpha-BHC												0.0049	<0.004 7	<0.0047	<0.004 7
beta-BHC												0.017	<0.004 7	<0.0047	<0.004 7
delta-BHC												0.037	<0.004 7	<0.0047	<0.004 7
gamma-BHC (Lindane)	4.99											0.052	<0.004 7	<0.0047	<0.004 7
Heptachlor	10											0.000079	<0.004 7	<0.0047	<0.004 7

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Aldrin	40											0.00005	<0.0047	<0.0047	<0.0047
Heptachlor Expoxide	16											0.000039	<0.0047	<0.0047	<0.0047
gamma-Chlordane	0.37											0.00081	<0.0047	<0.0047	<0.0047
alpha-Chlordane	0.37											0.00081	<0.0047	<0.0047	<0.0047
4,4'-DDE	0.33											0.00022	<0.0047	<0.0047	<0.0047
4,4'-DDD	0.33											0.00031	<0.0047	<0.0047	<0.0047
4,4'-DDT	0.33											0.00022	<0.0047	<0.0047	<0.0047
Dieldrin	0.0081											0.000054	<0.0047	<0.0047	<0.0047
Endosulfan I												0.051	<0.0047	<0.0047	<0.0047
Endosulfan II												0.051	<0.0047	<0.0047	<0.0047
Endrin	207											0.036	<0.0047	<0.0047	<0.0047
Endrin Aldehyde												na	<0.0047	<0.0047	<0.0047
Methoxychlor												0.03	<0.0094	<0.0094	<0.0094
Endosulfan Sulfate												89	<0.0047	<0.0047	<0.0047
Endrin Ketone												na	<0.019	<0.019	<0.019
Toxaphene												0.0002	<0.047	<0.047	<0.047
VOLATILE ORGANIC CHEMICALS (EPA 8260B)	ug/kg														
1,1,1,2-Tetrachloroethane												2.5	<0.2	<0.2	<0.2
1,1,1-Trichloroethane												11	<0.2	<0.2	<0.2
1,1,2,2-Tetrachoroethane												0.33	<0.2	<0.2	<0.2
1,1,2-Trichoroethane												1.2	<0.2	<0.2	<0.2

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
1,1-Dichloroethane												47	<0.2	<0.2	<0.2
1,1-Dichloroethene												na	<0.2	<0.2	<0.2
1,1-Dichloropropene												na	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene												na	<0.2	<0.2	<0.2
1,2,3-Trichloropropane												0.0095	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	9200											8.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene												na	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane												na	<1	<1	<1
1,2-Dibromoethane												0.033	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	1700											49	<0.2	<0.2	<0.2
1,2-Dichloroethane												0.73	<0.2	<0.2	<0.2
1,2-Dichloropropane	300											0.97	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene												na	<0.2	<0.2	<0.2
1,3-Dichlorobenzene												14	<0.2	<0.2	<0.2
1,3-Dichloropropane												na	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	300											2.8	<0.2	<0.2	<0.2
2,2-Dichloropropane												na	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)												7100	<5	<5	<5
2-Chloroethyl Vinyl Ether												na	<1	<1	<1
2-Chlorotoluene												na	<0.2	<0.2	<0.2
2-Hexanone												99	<2	<2	<2
4-Chlorotoluene												na	<0.2	<0.2	<0.2
Acetone												1500	<5	<5	<5
Benzene												1.2	<0.2	<0.2	<0.2

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Bromobenzene												na	<0.2	<0.2	<0.2
Bromochlorometha ne												na	<0.2	<0.2	<0.2
Bromodichlorometh ane												1.1	<0.2	<0.2	<0.2
Bromoform												8.5	<1	<1	<1
Bromomethane												8.7	<0.2	<0.2	<0.2
Carbon Disulfide												0.92	<0.2	<0.2	<0.2
Carbon Tetrachloride												0.51	<0.2	<0.2	**0.35**
Chlorethane												23	<1	<1	<1
Chlorobenzene												50	<0.2	<0.2	<0.2
Chloroform												0.17	**1.3**	<0.2	**0.44**
Chloromethane												2.1	<1	<1	<1
cis-1,2-Dichloroethylene												61	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene												na	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene												0.055	<0.2	<0.2	<0.2
Dibromochlorometh ane												na	<0.2	<0.2	<0.2
Dibromomethane												61	<0.2	<0.2	<0.2
Dichlorodifluoromet hane												390	<0.2	<0.2	<0.2
Ethylbenzene												7.3	<0.2	<0.2	<0.2
Hexachlorobenzene	19											0.00029			
Hexachlorobutadien e	600											0.86	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)												na	<1	<1	<1
Isopropylbenzene												660	<0.2	<0.2	<0.2
m,p-Xylene												1.8	<0.4	<0.4	<0.4
Methylene Chloride												8.9	<1	<1	<1
Methyt-Butyl Ether												37	<0.2	<0.2	<0.2

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Methyl Isobutyl Ketone												na	<2	<2	<2
Naphthalene												0.2	<1	<1	<1
n-Butylbenzene												na	<0.2	<0.2	<0.2
n-Propylbenzene												na	<0.2	<0.2	<0.2
o-Xylene												13	<0.2	<0.2	<0.2
p-Isopropyltoluene												na	<0.2	<0.2	<0.2
sec-Butylbenzene												na	<0.2	<0.2	<0.2
Styrene												100	<0.2	<0.2	<0.2
tert-Butylbenzene												na	<0.2	<0.2	<0.2
Tetrachloroethene	500											0.12	<0.2	<0.2	<0.2
Toluene												9.8	<1	<1	<1
trans-1,2-Dichloroethene												110	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene												0.055	<0.2	<0.2	<0.2
Trichloroethene	2100											0.17	<0.2	<0.2	<0.2
Trichlorofluoromethane												1300	<0.2	<0.2	<0.2
Vinyl Acetate												16	<2	<2	<2
Vinyl Chloride												0.015	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg													
Naphthalene	561	22000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
2-Methylnaphthalene	200		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
1-Methylnaphthalene	na		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	na	<0.095	<0.095	<0.094
Acenaphthylene	200		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Acenpththene	300	41x10^{6}	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Fluorene	536	35x10^{6}	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094

CHEMICALS	**SOIL** SLV[1]	**OCC** RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Phenanthrene	1170		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**240**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Anthracene	845		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**39**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Fluoranthene	2230	29x10^{6}	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1700**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Pyrene	1520	21x10^{6}	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1400**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Benzo(a)anthracene	1050	2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1700**	<8.7	<8.5	0.18	<0.0095	<0.0095	<0.0094
Chrysene	1290	270000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**2400**	<8.7	<8.5	0.18	<0.0095	<0.0095	<0.0094
Benzo(b)fluoranthene		2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**3000**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Benzo(k)fluoranthene	13000	27000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**820**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Benzo(a)pyrene	1450	270	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1400**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Ideno(1,2,3-c,d)pyrene	100	2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1000**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Dibenz(a,h)anthracene	1300	270	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**520**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Benzo(g,h,i)perylene	300		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1300**	<8.7	<8.5	0.2	<0.0095	<0.0095	<0.0094
PETROLEUM HYDROCARBONS	ug/kg														
Diesel Range (NWTPH-Dx)			<32000										<250	<250	<250
Lube Oil Range (NWTPH-Dx)			<63000										<400	<400	<400
Gasoline (NWTPH-HCID)	22x10^{6}	22x10^{6}	<22000												
Diesel Fuel (NWTPH-HCID)	70x10^{6}	70x10^{6}	<56000												
Lube Oil (NWTPH-HCID)			<110000												
TPH-Gas (NWTPH-Gx)													<100	<100	<100
Oil & Grease (EPA 1664)													<5200	<5200	<5200
% Moisture															

Notes:
[1] *Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.*
[2] *DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by ([a])*
[3] *Soil sample from boring for monitoring well; example MW1-S-3 is soil sample from MW1 boring taken from 3 feet depth below ground surface.*
[4]*Screening Level Values (SLVs) for water from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted yellow on the table.*
[5]*Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.*
Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value. ***Bolded*** *values are concentrations detected above the respective PQL.*
Grey shaded cells are PQLs greater than JSCS SLV; Yellow shaded cells are detected concentrations that exceed JSCS screening level values. Green shaded cells are detected concentrations that exceed RBCs for direct contact for occupational workers. Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

Table 4 –Sample Analyses Boring Soils

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12[3]	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg																
Antimony	64	410[a]																
Arsenic	7	1.7	<13	<13	<13	<13	<11	<11	<12	**17**	<13	<14	<13	<14	<14	<14	<14	<14
Beryllium	na	2000																
Barium	na	>100x10[3]	**220**	**200**	**170**	**190**	**110**	**110**	**160**	**210**	**210**	**160**	**210**	**220**	**180**	**180**	**170**	**150**
Cadmium	1	510	<0.67	<0.64	<0.65	<0.67	<0.57	<0.56	<0.62	**1.1**	<0.63	<0.68	<0.65	<0.68	<0.69	<0.68	<0.68	<0.68
Chromium (total)	111	180	**22**	**24**	**26**	**25**	**20**	**13**	**26**	**21**	**19**	**19**	**35**	**29**	**22**	**21**	**23**	**24**
Copper	149	38000																
Lead	17	800	**11**	**15**	**10**	**10**	**140**	**81**	**12**	**29**	**9.9**	**12**	**12**	**12**	**14**	**11**	**9**	**10**
Mercury	0.07	310	<0.33	<0.32	<0.32	<0.33	<0.28	<0.28	<0.31	<0.32	<0.32	<0.34	<0.32	<0.34	<0.35	<0.34	<0.34	<0.34
Nickel	48.6	20000																
Selenium	2	5100[a]	<13	<13	<13	<13	<11	<11	<12	<13	<13	<14	<13	<14	<14	<14	<14	<14
Silver	5	5100	<0.67	<0.64	<0.65	<0.67	<0.57	<0.56	<0.62	<0.65	<0.63	<0.68	<0.65	<0.68	<0.69	<0.68	<0.68	<0.68
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg																
Aroclor 1016	530	21000	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
Aroclor 1221		620	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1232		620	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1242		740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1248	1500	740	<67	<64	<65	<67	**110**	**69**	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1254	300	740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1260	200	740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1262			<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1268			<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg	ug/kg																
alpha-BHC														<6.8	<6.9			
beta-BHC														<6.8	<6.9			
delta-BHC														<6.8	<6.9			
gamma-BHC (Lindane)	4.99													<6.8	<6.9			
Heptachlor	10													<6.8	<6.9			
Aldrin	40													<6.8	<6.9			
Heptachlor Expoxide	16													<6.8	<6.9			
gamma-Chlordane	0.37													<14	<14			
alpha-Chlordane	0.37													<14	<14			
4,4'-DDE	0.33													<14	<14			
4,4'-DDD	0.33													<14	<14			
4,4'-DDT	0.33													<14	<14			
Dieldrin	0.0081													<14	<14			
Endosulfan I														<6.8	<6.9			
Endosulfan II														<14	<14			
Endrin	207													<14	<14			

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
Endrin Aldehyde														<14	<14			
Methoxychlor														<14	<14			
Endosulfan Sulfate														<14	<14			
Endrin Ketone														<14	<14			
Toxaphene														<68	<69			
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg																
Naphthalene	561	22000	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
2-Methylnaphthalene	200		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
1-Methylnaphthalene	na		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Acenaphthylene	200		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Acenpththene	300	$41x10^6$	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Fluorene	536	$35x10^6$	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Phenanthrene	1170		<8.9	<8.5	<8.7	<8.9	<7.6	**7.7**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Anthracene	845		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Fluoranthene	2230	$29x10^6$	<8.9	<8.5	<8.7	<8.9	<7.6	**21**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Pyrene	1520	$21x10^6$	<8.9	<8.5	<8.7	<8.9	<7.6	**23**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(a)anthracene	1050	2700	<8.9	<8.5	<8.7	<8.9	<7.6	**10**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Chrysene	1290	270000	<8.9	<8.5	<8.7	<8.9	<7.6	**17**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(b)fluoranthene		2700	<8.9	<8.5	<8.7	<8.9	<7.6	**25**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(k)fluoranthene	13000	27000	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(a)pyrene	1450	270	<8.9	<8.5	<8.7	<8.9	<7.6	**20**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Ideno(1,2,3-c,d)pyrene	100	2700	<8.9	<8.5	<8.7	<8.9	<7.6	**17**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Dibenz(a,h)anthracene	1300	270	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(g,h,i)perylene	300		<8.9	<8.5	<8.7	<8.9	<7.6	**23**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1

CHEMICALS	**Soil** SLV[1]	**OCC** RBC[2]	B-1-12	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
PETROLEUM HYDROCARBONS	ug/kg	ug/kg																
Diesel Range (NWTPH-Dx)							<28			<33				<34	<35			
Lube Oil Range (NWTPH-Dx)							<57			<65				<68	<69			
Gasoline (NWTPH-HCID)	$22x10^6$	$22x10^6$					<$23x10^3$			<$26x10^3$				<27	<28			
Diesel Fuel (NWTPH-HCID)	$70x10^6$	$70x10^6$					<$57x10^3$			<$65x10^3$				<68	<69			
Lube Oil (NWTPH-HCID)							<$110x10^3$			<$130x10^3$				<140	<140			
TPH-Gas (NWTPH-Gx)																		
Oil & Grease (EPA 1664)																		
OTHER ANALYSES																		
TOC (Standard Method)																		
% Moisture	25		22	23	25								23	27	28	26	27	27

Notes:

[1] *Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.*

[2] *DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by ([a])*

[3] *Soil Boring number, with depth in feet depth below ground surface; example B-1-12 is soil sample from boring 1 taken from 12 feet depth below ground surface.*

Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value.

***Bolded** values are concentrations detected above the respective PQL.*

Grey shaded cells are PQLs greater than JSCS SLV.

Yellow shaded cells are detected concentrations that exceed JSCS screening level values.

Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

5 FINDINGS AND CONCLUSIONS

The investigation was intended to carry out an upland source control evaluation on a voluntary basis and to evaluate occupational worker exposure to soil. Data collected were tabulated and compared to DEQ's JSCS SLVs (DEQ, Joint Source Control Strategy, Table 3-1). Data were also compared to DEQ's Risk Based Concentrations (RBCs) for occupational exposure to soil. No beneficial use has been identified for onsite groundwater; therefore, a comparison to human health criteria for groundwater was not made. On Table 3-1, DEQ has identified SLVs that are preferred for use in screening soil, catch basin sediment, storm water and groundwater for initial upland source control evaluations. The DEQ identified SLVs are a combination of federal minimum contaminant levels (MCLs) appropriately used for drinking water supplies, EPA tap water preliminary remediation goals (PRGs) used for evaluating the residential drinking water pathway, various ambient water quality criteria for ecological receptors, and ecological-based sediment quality and bioaccumulative criteria. As such, these DEQ-preferred screening SLVs are very conservative and not necessarily applicable to each site and its specific conditions. The screening levels are simply a means of evaluating the possible threat to the surface water environment and associated receptors, should the soil and groundwater actually migrate into the site storm water system and be distributed into a surface water body, or for groundwater to migrate and discharge into a surface water body at concentrations that exceed the SLVs. Screening using the SLVs does not account for attenuation, degradation or any other controls that may exist, such as, foundation slabs or area paving.

Some chemicals were not detected at PQLs that exceed SLVs for soil or water. For metals in soil, arsenic, mercury and selenium were not detected at PQLs that were 2 to 4 times their soil SLVs. Chlordane, DDD/DDE/DDT and dieldren have been identified as bioaccumulative chemicals, and their PQLs were 1 to 3 orders of magnitude higher than their SLVs. Achieving lower PQLs would significantly increase the cost of analysis. Pesticides are not identified as chemicals known to be used on site.

Only Cadmium, lead and mercury were detected in soil at concentrations that exceed their SLVs, near MW-1, MW-3, B4 and B3. Some PAHs were detected at concentrations that exceed their SLVs in boring B4. These sample locations, except for MW-1, are all beneath the existing building floor slab and are therefore not accessible to erosion or runoff into the site storm drain system.

Metals were not detected in groundwater at concentrations that exceed their SLVs although many of the metals PQLs were slightly to significantly higher than their SLVs. Copper, lead, nickel and selenium PQLs were slightly higher to 3 times higher than their SLVs. Arsenic and cadmium PQLs were 2 orders of magnitude higher than their SLVs but none of these metals, except for lead, were detected at elevated concentrations in onsite soil.

Only chloroform was detected in MW-1 and MW-3 at concentrations 2 to 10 times higher than the SLV. Chloroform is a common laboratory contaminant. Many chemical PQLs were slightly to significantly higher than their SLVs. PCB Aroclor PQLs were only slightly higher than their SLVs and only Aroclor 1248 was detected in soil in boring B3 but not at concentrations above its soil SLV. Some pesticide PQLs were 1 to 2 orders of magnitude higher than their SLVs but again pesticides are not identified as chemicals known to be used on site. In addition, if chemicals are hypothetically present in groundwater at very low concentrations, where they were not detected and their PQLs exceed the SLVs, they would be subjected to attenuation and degradation processes along their migration pathway assuming groundwater from beneath the site does in fact discharge to surface water.

Metals is soil did not exceed their RBCs for occupational exposure, except for arsenic which was not detected at PQLs of 10 times its RBCs. Aroclors were not detected at concentrations that exceed their RBCs. PAHs were not detected at concentrations that exceed their RBCs except for benzo(b)fluoranthene at 3,000 µg/kg, benzo(a)pyrene at 1,400 µg/kg, and dibenz(a,h)anthracene at 520 µg/kg.

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at elevated concentrations soil or groundwater beneath the Site at tested locations. Only cadmium, lead and mercury, and some PAHs, are present at concentrations that exceed their SLVs or RBCs in a limited area mostly beneath the existing building floor slab.

6 RECOMMENDATIONS

It is recommended that one or two rounds of groundwater sampling be performed to confirm the low detections that have been obtained and to verify the groundwater flow direction(s) within a low gradient regime.

Certain analyses of groundwater should be performed at lower detection limits to affirm the conclusions addressed in this report.

7 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk. Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of previous work. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing.

Richard C. Kent, R.G.

GeoPro Geologic Services LLC

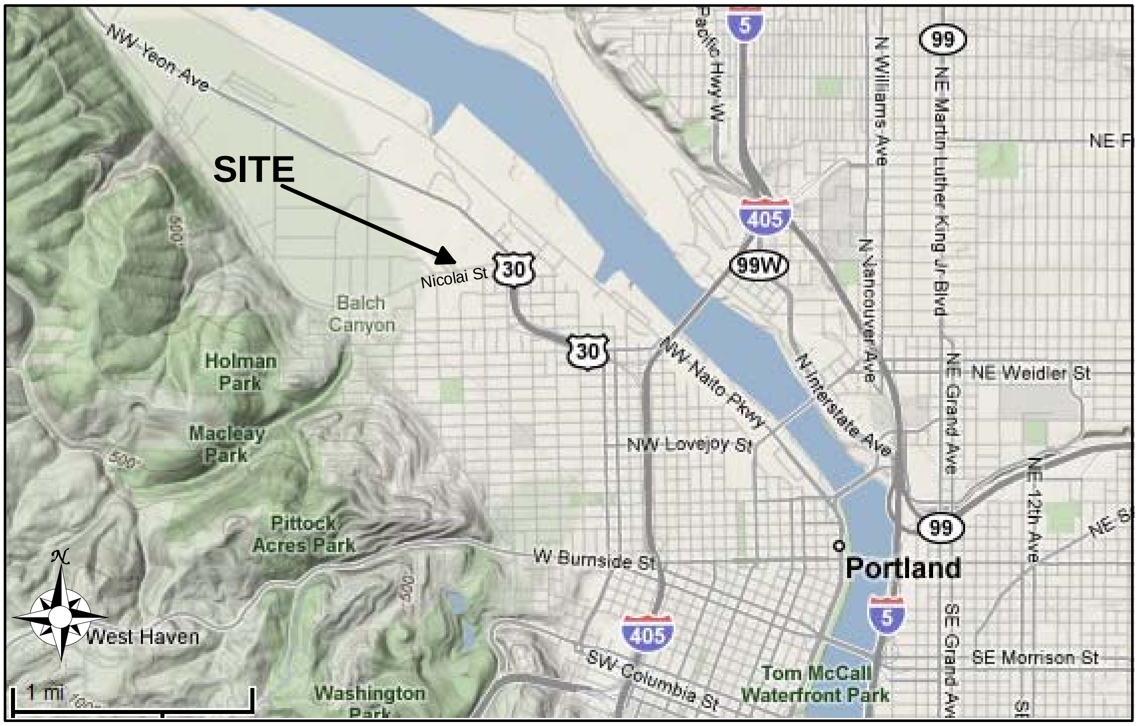
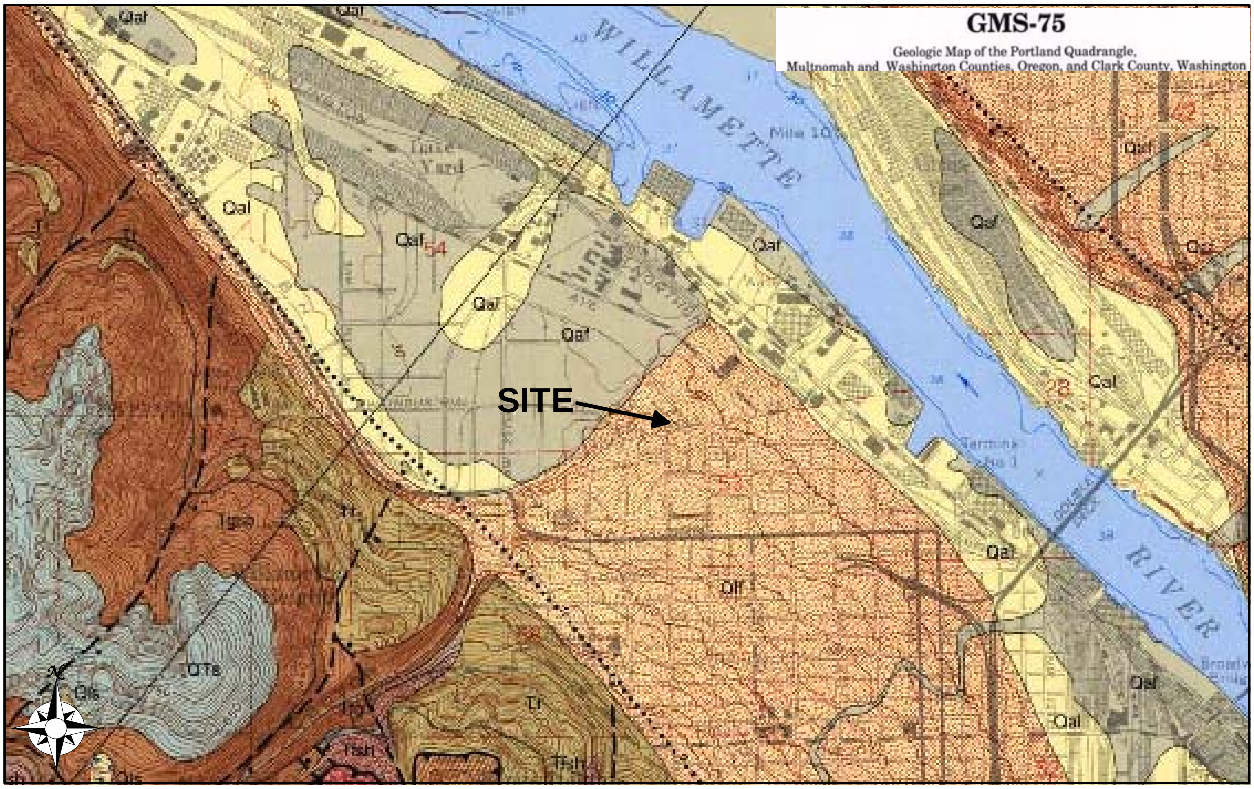


Figure 1 – Location Map, Portland, Oregon



Legend

Qaf — **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal — **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff — **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 2 – Geology Map, Northwest Portland, Oregon

Guilds Lake Remediation Project

Figure 3 – Adjacent Properties, NW Nicolai St., Portland, Oregon

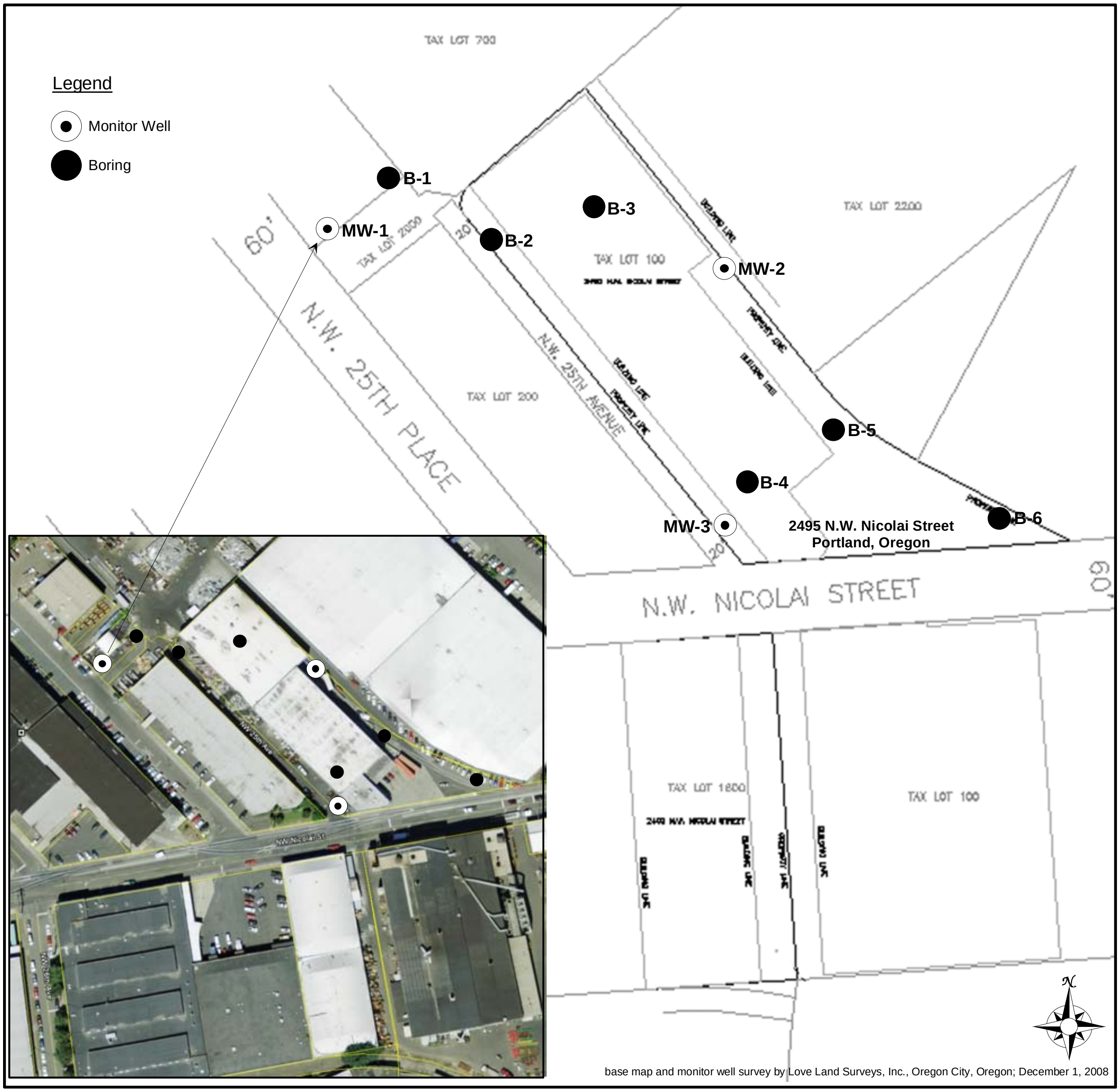


Figure 4 – Drilling Locations

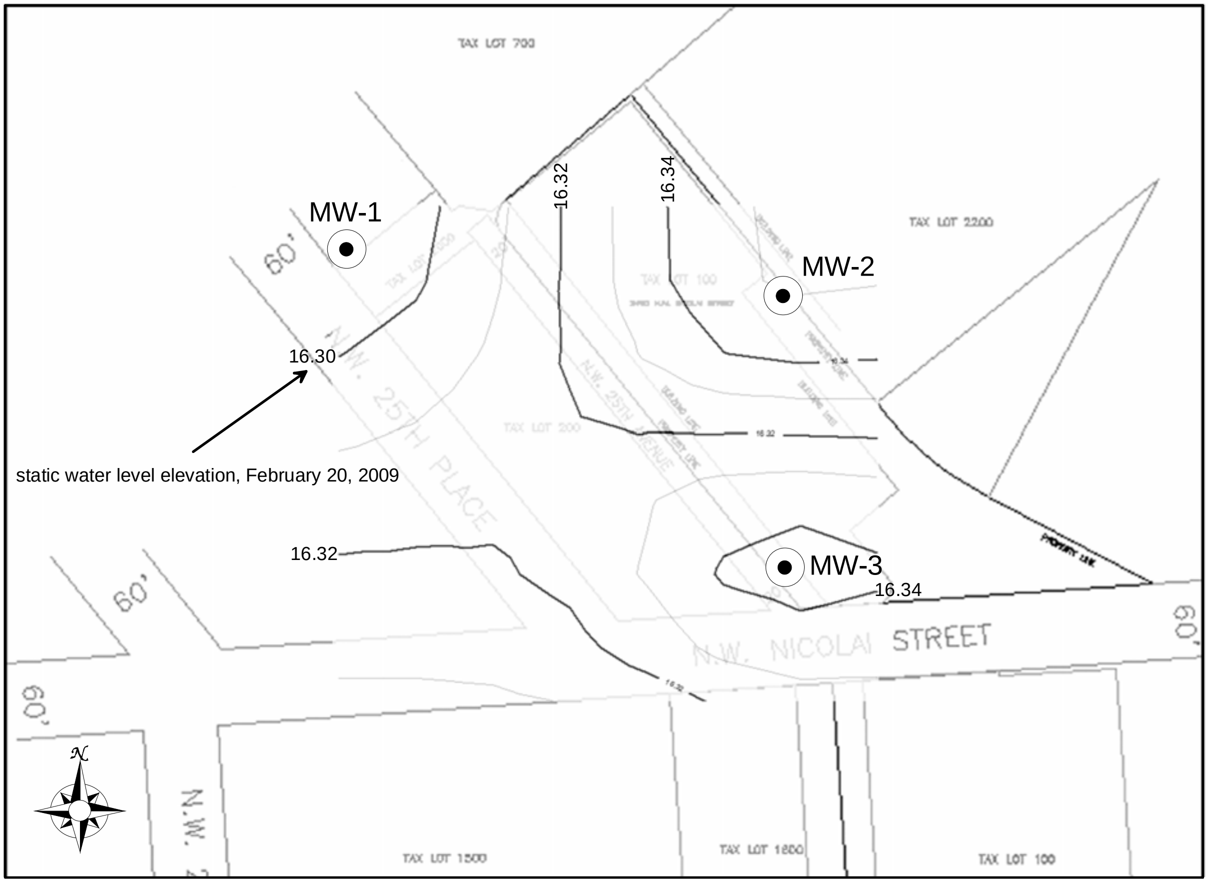


Figure 5 – Groundwater Flow Direction, February 20, 2009

8 APPENDICES

Appendix A – Geologic Logs: Borings and Monitor Wells

Appendix B – Monitor Well As-Built Sketches

Appendix C – Disposal Ticket, Soil Cuttings, Hillsboro Landfill

Appendix D – Laboratory Analyses

APPENDIX A

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GEOLOGIC LOG

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2622 NW 25th Pl., Portland, OR	**Drill Hole No.: MW-1**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe/Mobile air rotary	Sampling Method(s): Core tube/grab

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/31/08 0845	10/31/08 1050		50.6 ft	asphalt	Water 0
Depth 1st Water Date/Time:	**Geophys. Logs:**	**Sec-Tws-Rng**	**Laboratory:**	**C-O-C Number:**	Soil 3
11/1/08 ~42 ft	na		Onsite, Redmond		

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill			dry	0-12 ft Geoprobe sample soil
2										
3	3				CL	silty clay		dk gray	damp	
4	3.5			none						
5								med yel brown		
6	6									
7	6.5			none						
8										
9	9									
10	9.5			none	SM	silty well sorted fn sand		med brown		
11										
12										
13										
14										
15										
16										
17										
18										
19										
20			0945							

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encountered described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

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GEOLOGIC LOG

Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2622 NW 25th Pl., Portland, OR	**Drill Hole No.:** **MW-1**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
21				none						
22					SM	silty well sorted fn sand		mod brown	damp	
23										
24										
25				none						
26										
27										
28										
29				none						
30										
31										
32										
33										
34										
35				none						
36										
37										
38									moist	
39										
40				none	----------	----------------				
41					GP	silty gravel			----------------	
42									saturated	
43										
44			1020							
45				none	----------	----------------			----------------	

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GEOLOGIC LOG

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2622 NW 25th Pl., Portland, OR	**Drill Hole No.: MW-1**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
46					SW-SC	clayey, silty well sorted fn sand		mod brown	moist	
47										
48										
49										
50			1040	none						TD 50.6 ft
51										
52										
53										
54										
55										
56										
57										
58										
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										

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GEOLOGIC LOG

LOCATION SKETCH MAP:

Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** **MW-2**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Mobile air rotary	Sampling Method(s): split spoon and grab

Drilling Start Date/Time: 10/31/08 0835	Drilling End Date/Time: 10/31/08 1220	Elevation:	Total Depth: 55 ft	Surface Conditions: asphalt	Samples: Water 0
Depth 1st Water Date/Time: ~45 ft. 10/31/08 1250	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 3

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
						fill		lt gray	dry	
1						---------------		------------	---------------	
2										
3										
4										
5								mod		
		3	0909	none		v slightly	med stiff	brown	damp	
6		3			ML	clayey		5Y 3/4		
		4				silt				
7										
8										
9										
10										
		2								
11		3		none						
		4								
12										
					----------	----------------	--------------			
13										
14										
15										
		3								
16		3	0935	none	SW	fn silty sand	loose			
		5								
17										
18										
19										
20			0947							

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GEOLOGIC LOG

Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2495 NW Nicolai, Portland, OR	**Drill Hole No.:** MW-2

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
21		6 7 7	1052	none	SW	silty, slightly clayey, well sorted fn sand	med dense	mod brown 5Y4/4	damp	
22										
23										
24										drill rods stuck decided to drill through; no sample at 25 ft
25										
26										
27										
28										
29										
30		5 7 9	1108	none						
31										
32										
33										
34					SW-SC	silty sand with gravel	very dense			well rounded pebbles
35		14 28 30	1120	none						abndt basalt pebbles
36										
37										
38										
39										pebbles of white quartz increasing
40		14 24 35	1134	none						
41					GP-GM	silty sandy gravel				
42										pebbles of yellow quartz, well rounded, increasing
43										
44										
45										

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GEOLOGIC LOG

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai, Portland, OR	**Drill Hole No.:** MW-2

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
46		14 15 17	1154	none	GP-GM	silty sandy poorly graded gravel	v dense	slightly yel-mod brown	saturated	groundwater encountered abt 45.2 ft
47										
48					-----------	----------------			------------- dec saturation	
49					SW-SC	gravelly sand				
50										
51										sand plugging drill rods; no sample
52										
53										
54			1220							TD 55 ft
55										
56										
57										
58										
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										

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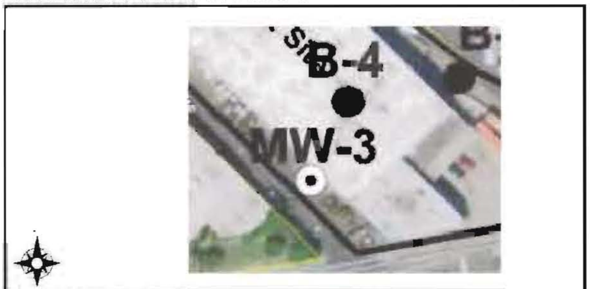
GEOLOGIC LOG

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** MW-3
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe/Mobile air rotary	Sampling Method(s): Core tube/grab

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
11/1/08 1215	11/1/08 1410		55 ft	asphalt-cement	Water 0
Depth 1st Water Date/Time: 11/1/08 ~50 ft	Geophys. Logs: na	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 2

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill		lt gray; brick red	dry	0-11 ft Geoprobe soil sampling
2						angular gravel w/red brick frags				
3										
4										
5					-----------	----------------		-------------		
6	6 6.5		0928	none	ML	clayey silt		lt brown	damp	
7										
8								-------------		
9	9 9.5		0940	none				mod brown	--------------- moist	
10										
11										
12										
13										
14										
15										
16			1255							
17										
18										
19										
20			1302							

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GEOLOGIC LOG

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** **MW-3**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
					ML	clayey silt		mod		
21								brown	damp	
22										
					-----------	----------------				
23										
24										
25										
			1308	none	SW-SC	clayey silty				
26						well sorted				
						fn sand				
27										
28										
29										
30			1315	none						
31										
32										
33										
34										
35			1317	none						
36										
37										
38									----------------	
39										
40			1323	none						
									moist	
41						inc dark				
						grains				
42										
43										
44										
45			1342	none						

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Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.: MW-3**

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
46					SW-SC	silty well sorted sand		mod brown	moist wet	
47					----------	----------				
48					GC	sandy gravel			---------- saturated	
49										
50			1354	none						
51										
52					----------	----------			----------	
53					SW-SC	silty well sorted sand				
54									moist	TD 55 ft
55			1400	none						
56										
57										
58										
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										

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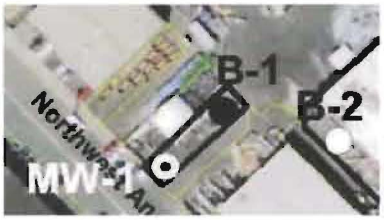
GEOLOGIC LOG

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2622 NW 25th Pl., Portland, OR	**Drill Hole No.:** B-1
Drilling Co./Foreman: Env West/Randy	**Geologist:** rck
Drilling Method/C57/Rig: Geoprobe	**Sampling Method(s):** core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/30/08 1428	10/30/08 1455		12 ft	asphalt-cement	Water 0
Depth 1st Water Date/Time: none	**Geophys. Logs:**	**Sec-Tws-Rng**	**Laboratory:** Onsite, Redmond	**C-O-C Number:**	Soil 1

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill		lt gry	dry	
2				none						
3			1430							problem with
4			---------							fill pebbles
5			4							plugged core tube
6				none						
7										no recovery
8			1435							
9			--------- 8							
10				none		v slightly		mod brn	dry	
11						clayey		5Y 4/4		
12	B-1-11.5		1455		ML	silt				
13			12							
14										
15										
16										
17										
18										
19										
20										

GEOLOGIC LOG

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** B-2
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/30/08 1535	10/30/08 1600		12 ft	asphalt	Water 0
Depth 1st Water Date/Time: none	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 3

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill		lt gray	dry	angular frag
2										
3	3 3.5		1547 4	none	--------	------------- 2.5		------------	---------------	
4										
5										
6	6 6.5		1549 8	none	ML	v slightly clayey silt		mod brown 5Y 4/4	moist	
7										
8										
9										
10	10 10.5									
11			1600 12	none						
12										
13										
14										
15										
16										
17										
18										
19										
20										

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encounteed described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

GEOLOGIC LOG

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

LOCATION SKETCH MAP:

Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.: B-3**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): Core tube

Drilling Start Date/Time: 11/1/08 1102	Drilling End Date/Time: 11/1/08 1124	Elevation:	Total Depth: 12 ft	Surface Conditions: asphalt (interior)	Samples: Water 0
Depth 1st Water Date/Time: na	Geophys. Logs: na	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 3

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1									dry	
2										
3						fill		reddish		
4	4 4.5		1107	none		silt, sand and angular gravel		yellow mod brown		
5										
6	6 6.5			none						
7										
8										
9										
10										
11	11 11.5		1124	none	ML	clayey silt		reddish mod brown	damp	TD 12 ft
12										
13										
14										
15										
16										
17										
18										
19										
20										

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GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GEOLOGIC LOG

LOCATION SKETCH MAP:

Project No./Name: 080819/Calbag Phase II	CLIENT: Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** B-4
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): Core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
11/1/08 0950	11/1/08 1034		11 ft	asphalt (interior)	Water 0
Depth 1st Water Date/Time:	**Geophys. Logs:**	**Sec-Tws-Rng**	**Laboratory:**	**C-O-C Number:**	Soil 3
none	na		Onsite, Redmond		

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill		lt yel-brn	dry	
2										
3					CL	silty clay		med brn		
4	4 4.5		0955	none		slightly plastic		occ reddish to	damp	
5								yel		
6	6 6.5		1026	none						
7										
8	8				ML	clayey silt		pale brn		
9	8.5		1034	none				5Y5/2		
10										TD 11 ft
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

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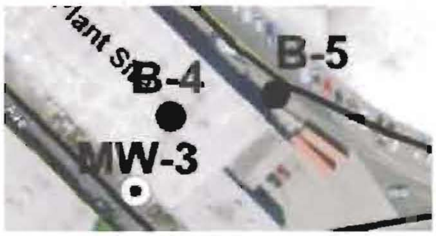
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GEOLOGIC LOG

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.: B-5**
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/30/08 1250	10/30/08 1320		12 ft	asphalt	Water 0
Depth 1st Water Date/Time: none	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 3

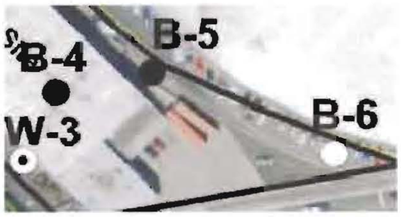
DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
								lt gray	dry	angular frag
1						fill				
2										
3	3			none	--------	--------------		------------		
	3.5		1304			2.8			--------------	assume water
4			4						wet	line break and ditch fill saturation
5										
6	6					---------------		mod	--------------	
	6.5			none		--------------		brown	moist	
7			1307					5Y 3/4		
8			8							0.3 ft gravel zone ~6 ft
9	9									
	9.5				ML	v slightly clayey silt				
10										
11				none						
			1315							
12			12							
13										
14										
15										
16										
17										
18										
19										
20										

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encountered described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GEOLOGIC LOG

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Project Location: 2495 NW Nicolai St., Portland	**Drill Hole No.:** B-6
Drilling Co./Foreman: Env West/Randy	Geologist: rck
Drilling Method/C57/Rig: Geoprobe	Sampling Method(s): core tube

Drilling Start Date/Time:	Drilling End Date/Time:	Elevation:	Total Depth:	Surface Conditions:	Samples:
10/30/08 1330	10/30/08 1350		11 ft	asphalt	Water 0
Depth 1st Water Date/Time: none	Geophys. Logs:	Sec-Tws-Rng	Laboratory: Onsite, Redmond	C-O-C Number:	Soil 3

DEPTH (feet)	SAMPLE NO.	SPT	Time	HC Odor	USCS CLASS	NAME	DENSITY	COLOR	MOISTURE	REMARKS
1						fill		lt gray	dry	angular frag
2										
3	3 3.5		1338	none	--------	-------------- ~3		------------	----------------	
4			4						inc moisture	
5										
6	6 6.5				ML	v fn clayey silt		mod	--------------	
7			1346	none				brown 5Y 4/4	damp	
8			8							
9	9 9.5									
10			1350							
11			11	none						
12										
13										
14										
15										
16										
17										
18										
19										
20										

This geologic log and related information depict subsurface conditions only at a specific location and time. Geologic conditions at other locations may differ from conditions encountered described in this log. The passage of time may result in a change in geologic and hydrogeologic conditions and engineering properties at this location.

APPENDIX B

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

AS-BUILT WELL INSTALLATION SKETCH

SHEET 1 of 1

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Install Date/Time: Start: 11/1/08 1050 End: 11/1/08 1135	**Well No.:** **MW-1 (200-557)** Project Location: 2622 NW 25th Pl., Portland

First Groundwater Encounter During Drilling Was:	Date: 11/1/08 Time: 1015 Depth: ~42 ft	Elevation:	Total Drilled Depth:	Drilling Co./Foreman:	Type of Well:
			50.6 ft	Env West/Randy	monitor
Development Method:	Geologist:	Sec-Tws-Rng	Padlock No.:	Drill Rig Type:	Install SWL:
bail/pump	rck			air rotary	40.24

☒ 'Christy'-type traffic and security surface box
or ☐ Above Ground Casing

Blank casing ID 2 - inches

Boring OD 6 - inches

Optional seal depth to top na feet

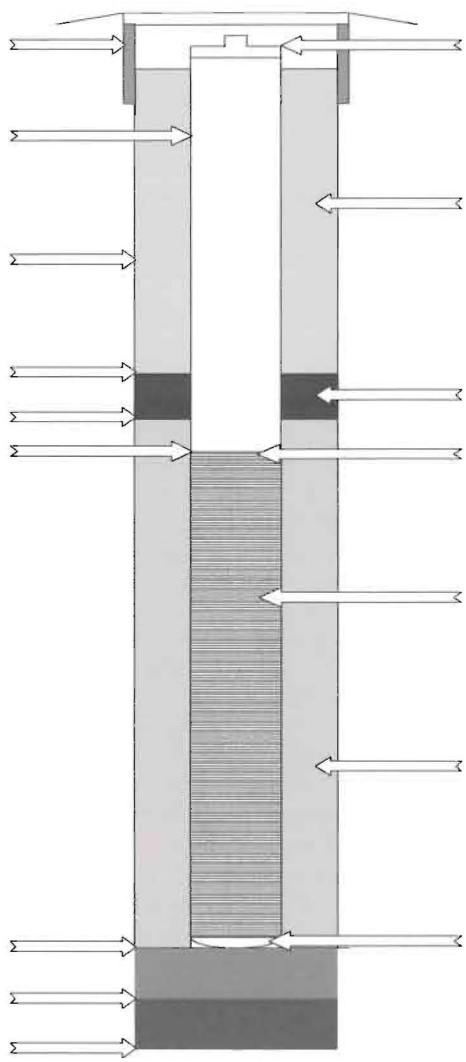
Filter pack depth to top 38 feet

Screen depth to top 40 feet

Depth bottom of casing 50 feet

Overdrill sand backfill bottom 0.6 feet

Overdrill bentonite backfill bottom na feet



Water-tight well plug with padlock

Surface annular seal
☒ Bentonite or
☐ Type I-II cement

Bentonite seal (optional)

Flush threaded O-ring coupling

Schedule 40 PVC screen
slot size 0.010 inches

Granular filter pack kiln dried Coloradi silica sand, #10-20

Bottom flush threaded cap
☒ pointed tip T-200 or
☐ round cap

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

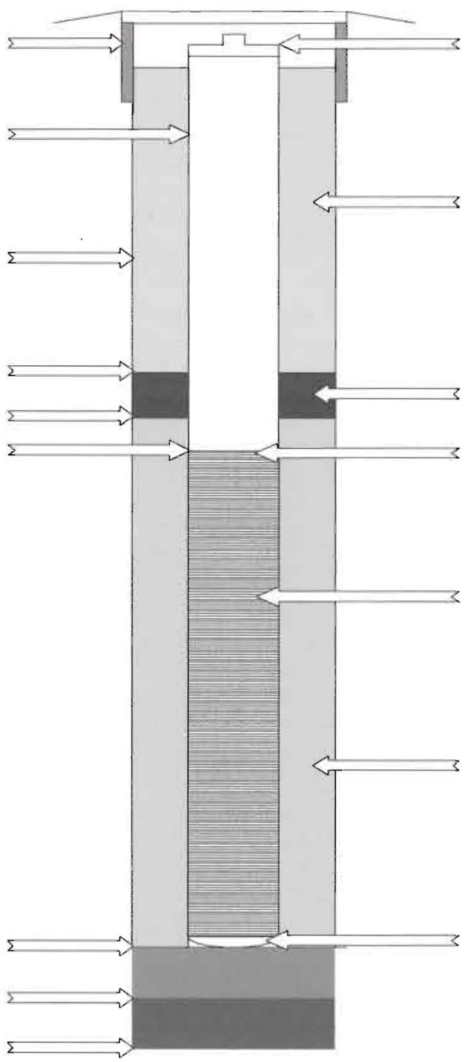
AS-BUILT WELL INSTALLATION SKETCH

SHEET 1 of 1

LOCATION SKETCH MAP:

Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Install Date/Time: Start: 10/31/08 1245 End: 10/31/08 1430	**Well No.:** **MW-2 (L88328)**
	Project Location: 2945 NW Nicolai, Portland, OR

First Groundwater Encounter During Drilling Was:	Date: 10/31/08 Time: 1250 Depth: ~45 ft	Elevation:	Total Drilled Depth:	Drilling Co./Foreman:	Type of Well:
			55 ft	Env West/Randy	Monitor
Development Method:	Geologist:	Sec-Tws-Rng	Padlock No.:	Drill Rig Type:	Install SWL:
bail/pump	rck			air rotary	44.33 ft



☒ 'Christy'-type traffic and security surface box
or ☐ Above Ground Casing

Blank casing ID 2 - inches

Boring OD 6 - inches

Optional seal depth to top na feet

Filter pack depth to top 38.3 feet

Screen depth to top 39.5 feet

Depth bottom of casing 49.5 feet

Overdrill sand backfill bottom 5 feet

Overdrill bentonite backfill bottom na feet

Water-tight well plug with padlock

Surface annular seal
☒ Bentonite or
☐ Type I-II cement

Bentonite seal (optional)

Flush threaded O-ring coupling

Schedule 40 PVC screen
slot size 0.010 inches

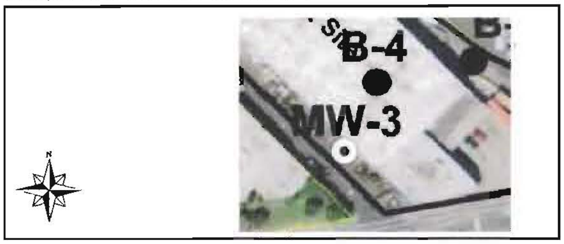
Granular filter pack kiln dried
Colorado silica sand, #10-20

Bottom flush threaded cap
☒ pointed tip T-200 or
☐ round cap

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

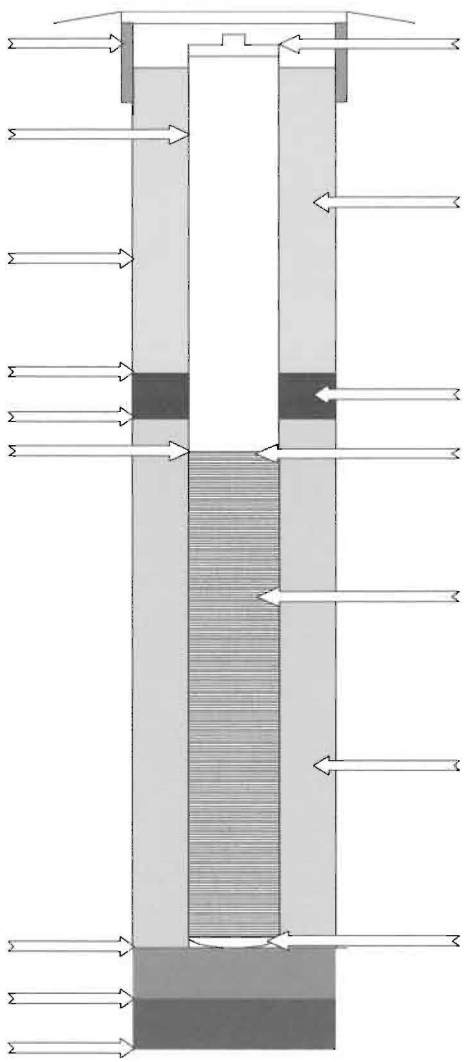
AS-BUILT WELL INSTALLATION SKETCH

LOCATION SKETCH MAP:



Project No./Name:	CLIENT:
080819/Calbag Phase II	Calbag Metals Co.
Install Date/Time: Start: 11/1/08 1415 End: 11/1/08 1450	**Well No.:** **MW-3 (L88329)**
	Project Location: 2495 NW Nicolai St., Portland

First Groundwater Encounter During Drilling Was:	Date: 11/1/08 Time: 1356 Depth: ~50.5	Elevation:	Total Drilled Depth:	Drilling Co./Foreman:	Type of Well:
			55 ft	Env West/Randy	Monitor
Development Method:	**Geologist:**	**Sec-Tws-Rng**	**Padlock No.:**	**Drill Rig Type:**	**Install SWL:**
bail/pump	rck			air rotary	46.98 ft



☒ 'Christy'-type traffic and security surface box
or ☐ Above Ground Casing

Blank casing ID 2 - inches

Boring OD 6 - inches

Optional seal depth to top na feet

Filter pack depth to top 43 feet

Screen depth to top 45 feet

Depth bottom of casing 55 feet

Overdrill sand backfill bottom 55.8 feet

Overdrill bentonite backfill bottom na feet

Water-tight well plug with padlock

Surface annular seal
☒ Bentonite or
☐ Type I-II cement

Bentonite seal (optional)

Flush threaded O-ring coupling

Schedule 40 PVC screen
slot size 0.010 inches

Granular filter pack kiln dried
Colorado silica sand, #10-20

Bottom flush threaded cap
☒ pointed tip T-200 or
☐ round cap

APPENDIX C

STE MANAGEMENT

Hillsboro Landfill, Inc
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 1209556

stomer Name 3 KINGS ENVIRONMENTAL 3 KINGS Carrier SELFHLD SELF HAULED
cket Date 05/07/2009 Vehicle# 3kings Volume
yment Type Credit Account Container
nual Ticket# Driver colby
uling Ticket# Check#
ute Billing # 0000442
ate Waste Code Gen EPA ID N/A
nifest na
stination Grid
) 08922
ofile 103236or (PCS)
nerator OR-CALBAG METALS CALBAG METALS

	Time	Scale	Operator	Inbound		
					Gross	21580 lb*
1	05/07/2009 12:27:47	Inbound 2	ajm		Tare	13440 lb
t	05/07/2009 13:16:20	Outbound	sdm		Net	8140 lb
			* Manual Weight		Tons	4.07

mments

Consumer Comments? We want to know. Please call.

oduct	LD%	Qty	UOM	Rate	Tax	Amount	Origin
Cont Soil Pet-RGC-	100	4.07	Tons	26.50		$107.86	MULT-IN
EVL-Env Fee Lg. -	100	1	Load	6.00		$6.00	MULT-IN
AF1-Approval Fee S	100	1	Each	35.00		$35.00	MULT-IN

Total Tax
Total Ticket $148.86

iver's Signature
M

APPENDIX D

LABORATORY PAGES REMOVED RELATED TO NON-PROJECT SAMPLES DUE TO PRIVLEGED AND CONFIDENTIAL

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 13, 2008

Yancy Meyer
Blue Mountain Environmental, Inc.
90 Baldwin Road
Walla Walla, WA 99362

Re: Analytical Data for Project E2008/0804
Laboratory Reference No. 0811-008

Dear Yancy:

Enclosed are the analytical results and associated quality control data for samples submitted on November 4, 2008.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

Case Narrative

Samples were collected on October 30, 2008 and received by the laboratory on November 4, 2008. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

NWTPH-HCID

Date Extracted: 11-6-08
Date Analyzed: 11-6-08

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	**B-5-6**	**B-5-9.5**
Lab ID:	11-008-05	11-008-06
Gasoline:	**ND**	**ND**
PQL:	27	28
Diesel Fuel:	**ND**	**ND**
PQL:	68	69
Lube Oil:	**ND**	**ND**
PQL:	140	140
Surrogate Recovery:		
o-Terphenyl	88%	86%
Flags:	Y	Y

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

NWTPH-HCID
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-6-08
Date Analyzed: 11-6-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	MB1106S1
Gasoline:	**ND**
PQL:	20
Diesel Fuel:	**ND**
PQL:	50
Lube Oil:	**ND**
PQL:	100
Surrogate Recovery:	
o-Terphenyl	87%
Flags	Y

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

NWTPH-Dx

Date Extracted: 11-7-08
Date Analyzed: 11-7-08

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	**B-5-6**	**B-5-9.5**
Lab ID:	11-008-05	11-008-06
Diesel Range:	**ND**	**ND**
PQL:	34	35
Identification:	---	---
Lube Oil Range:	**ND**	**ND**
PQL:	68	69
Identification:	---	---
Surrogate Recovery		
o-Terphenyl:	89%	82%
Flags:	Y	Y

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-7-08
Date Analyzed:	11-7-08
Matrix:	Soil
Units:	mg/kg (ppm)

Lab ID:	MB1107S1
Diesel Range:	**ND**
PQL:	25
Identification:	---
Lube Oil Range:	**ND**
PQL:	50
Identification:	---
Surrogate Recovery	
o-Terphenyl:	89%
Flags:	Y

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-7-08
Date Analyzed: 11-7-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	11-008-05	11-008-05 DUP
Diesel Range:	**ND**	**ND**
PQL:	25	25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	89%	90%
Flags:	Y	Y

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-5-3**					
Laboratory ID:	11-008-04					
Naphthalene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*57*	*39 - 110*				
2-Fluorobiphenyl	*48*	*41 - 107*				
Terphenyl-d14	*71*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-5-6**					
Laboratory ID:	11-008-05					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*58*	*41 - 107*				
Terphenyl-d14	*76*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-5-9.5**					
Laboratory ID:	11-008-06					
Naphthalene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0093	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*69*	*39 - 110*				
2-Fluorobiphenyl	*59*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-6-4**					
Laboratory ID:	11-008-07					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*78*	*39 - 110*				
2-Fluorobiphenyl	*66*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-6-6**					
Laboratory ID:	11-008-08					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*57*	*39 - 110*				
2-Fluorobiphenyl	*49*	*41 - 107*				
Terphenyl-d14	*71*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-6-9**					
Laboratory ID:	11-008-09					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*56*	*39 - 110*				
2-Fluorobiphenyl	*46*	*41 - 107*				
Terphenyl-d14	*72*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-1-12**					
Laboratory ID:	11-008-10					
Naphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*79*	*39 - 110*				
2-Fluorobiphenyl	*67*	*41 - 107*				
Terphenyl-d14	*76*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**B-2-3**					
Laboratory ID:	11-008-11					
Naphthalene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0085	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*67*	*39 - 110*				
2-Fluorobiphenyl	*56*	*41 - 107*				
Terphenyl-d14	*73*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-2-6**					
Laboratory ID:	11-008-12					
Naphthalene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0087	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*57*	*41 - 107*				
Terphenyl-d14	*67*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-2-10**					
Laboratory ID:	11-008-13					
Naphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*58*	*41 - 107*				
Terphenyl-d14	*71*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1107S2					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*61*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-03										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0511**	**0.0529**	0.0833	0.0833	ND	61	64	45 - 94	3	24	
Acenaphthylene	**0.0565**	**0.0619**	0.0833	0.0833	ND	68	74	51 - 104	9	25	
Acenaphthene	**0.0532**	**0.0580**	0.0833	0.0833	ND	64	70	53 - 103	9	21	
Fluorene	**0.0585**	**0.0636**	0.0833	0.0833	ND	70	76	57 - 107	8	19	
Phenanthrene	**0.0634**	**0.0659**	0.0833	0.0833	ND	76	79	61 - 104	4	17	
Anthracene	**0.0649**	**0.0679**	0.0833	0.0833	ND	78	82	58 - 102	5	14	
Fluoranthene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	69 - 109	2	27	
Pyrene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	71 - 114	2	27	
Benzo[a]anthracene	**0.0664**	**0.0673**	0.0833	0.0833	ND	80	81	61 - 123	1	18	
Chrysene	**0.0698**	**0.0710**	0.0833	0.0833	ND	84	85	66 - 124	2	19	
Benzo[b]fluoranthene	**0.0748**	**0.0752**	0.0833	0.0833	ND	90	90	72 - 114	1	26	
Benzo[k]fluoranthene	**0.0718**	**0.0720**	0.0833	0.0833	ND	86	86	70 - 115	0	17	
Benzo[a]pyrene	**0.0679**	**0.0687**	0.0833	0.0833	ND	82	82	57 - 104	1	18	
Indeno(1,2,3-c,d)pyrene	**0.0751**	**0.0757**	0.0833	0.0833	ND	90	91	63 - 121	1	20	
Dibenz[a,h]anthracene	**0.0762**	**0.0766**	0.0833	0.0833	ND	91	92	62 - 125	1	15	
Benzo[g,h,i]perylene	**0.0746**	**0.0748**	0.0833	0.0833	ND	90	90	64 - 117	0	21	
Surrogate:											
Nitrobenzene-d5						*66*	*68*	*39 - 110*			
2-Fluorobiphenyl						*57*	*61*	*41 - 107*			
Terphenyl-d14						*76*	*77*	*54 - 126*			

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-5-3**					
Laboratory ID:	11-008-04					
Aroclor 1016	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*59*	*35-127*				
Client ID:	**B-5-6**					
Laboratory ID:	11-008-05					
Aroclor 1016	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*75*	*35-127*				
Client ID:	**B-5-9.5**					
Laboratory ID:	11-008-06					
Aroclor 1016	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.069	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*80*	*35-127*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-6-4**					
Laboratory ID:	11-008-07					
Aroclor 1016	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*79*	*35-127*				
Client ID:	**B-6-6**					
Laboratory ID:	11-008-08					
Aroclor 1016	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*59*	*35-127*				
Client ID:	**B-6-9**					
Laboratory ID:	11-008-09					
Aroclor 1016	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*84*	*35-127*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-1-12**					
Laboratory ID:	11-008-10					
Aroclor 1016	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*70*	*35-127*				
Client ID:	**B-2-3**					
Laboratory ID:	11-008-11					
Aroclor 1016	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.064	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*82*	*35-127*				
Client ID:	**B-2-6**					
Laboratory ID:	11-008-12					
Aroclor 1016	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.065	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*74*	*35-127*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-2-10**					
Laboratory ID:	11-008-13					
Aroclor 1016	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.067	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*87*	*35-127*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1106S1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*98*	*35-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-24										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.425**	**0.401**	0.500	0.500	ND	**85**	**80**	24-128	6	14	
Surrogate:											
DCB						*73*	*72*	*35-127*			

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-5-6**					
Laboratory ID:	11-008-05					
alpha-BHC	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
gamma-BHC	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
beta-BHC	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
delta-BHC	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
Heptachlor	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
Aldrin	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
Heptachlor Epoxide	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
gamma-Chlordane	**ND**	14	EPA 8081	11-11-08	11-11-08	
alpha-Chlordane	**ND**	14	EPA 8081	11-11-08	11-11-08	
4,4'-DDE	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endosulfan I	**ND**	6.8	EPA 8081	11-11-08	11-11-08	
Dieldrin	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endrin	**ND**	14	EPA 8081	11-11-08	11-11-08	
4,4'-DDD	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endosulfan II	**ND**	14	EPA 8081	11-11-08	11-11-08	
4,4'-DDT	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endrin Aldehyde	**ND**	14	EPA 8081	11-11-08	11-11-08	
Methoxychlor	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endsulfan Sulfate	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endrin Ketone	**ND**	14	EPA 8081	11-11-08	11-11-08	
Toxaphene	**ND**	68	EPA 8081	11-11-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*57*	*40-109*				
DCB	*65*	*30-112*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

ORGANOCHLORINE
PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B-5-9.5**					
Laboratory ID:	11-008-06					
alpha-BHC	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
gamma-BHC	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
beta-BHC	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
delta-BHC	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
Heptachlor	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
Aldrin	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
Heptachlor Epoxide	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
gamma-Chlordane	**ND**	14	EPA 8081	11-11-08	11-11-08	
alpha-Chlordane	**ND**	14	EPA 8081	11-11-08	11-11-08	
4,4’-DDE	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endosulfan I	**ND**	6.9	EPA 8081	11-11-08	11-11-08	
Dieldrin	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endrin	**ND**	14	EPA 8081	11-11-08	11-11-08	
4,4’-DDD	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endosulfan II	**ND**	14	EPA 8081	11-11-08	11-11-08	
4,4’-DDT	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endrin Aldehyde	**ND**	14	EPA 8081	11-11-08	11-11-08	
Methoxychlor	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endsulfan Sulfate	**ND**	14	EPA 8081	11-11-08	11-11-08	
Endrin Ketone	**ND**	14	EPA 8081	11-11-08	11-11-08	
Toxaphene	**ND**	69	EPA 8081	11-11-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*58*	*40-109*				
DCB	*68*	*30-112*				

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

ORGANOCHLORINE
PESTICIDES by EPA 8081A
QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1111S1					
alpha-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
gamma-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
beta-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
delta-BHC	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Heptachlor	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Aldrin	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Heptachlor Epoxide	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
gamma-Chlordane	**ND**	10	EPA 8081	11-11-08	11-11-08	
alpha-Chlordane	**ND**	10	EPA 8081	11-11-08	11-11-08	
4,4'-DDE	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endosulfan I	**ND**	5.0	EPA 8081	11-11-08	11-11-08	
Dieldrin	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endrin	**ND**	10	EPA 8081	11-11-08	11-11-08	
4,4'-DDD	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endosulfan II	**ND**	10	EPA 8081	11-11-08	11-11-08	
4,4'-DDT	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endrin Aldehyde	**ND**	10	EPA 8081	11-11-08	11-11-08	
Methoxychlor	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endsulfan Sulfate	**ND**	10	EPA 8081	11-11-08	11-11-08	
Endrin Ketone	**ND**	10	EPA 8081	11-11-08	11-11-08	
Toxaphene	**ND**	50	EPA 8081	11-11-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*71*	*40-109*				
DCB	*79*	*30-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-008-05										
	MS	MSD	MS	MSD		MS	MSD				
gamma-BHC	**31.0**	**31.3**	50.0	50.0	ND	**62**	**63**	48-94	1	10	
Heptachlor	**29.8**	**29.8**	50.0	50.0	ND	**60**	**60**	39-103	0	9	
Aldrin	**30.2**	**29.8**	50.0	50.0	ND	**60**	**60**	39-93	1	8	
Dieldrin	**78.4**	**78.4**	125	125	ND	**63**	**63**	44-101	0	9	
Endrin	**73.0**	**74.6**	125	125	ND	**58**	**60**	28-105	2	12	
4,4'-DDT	**67.1**	**69.8**	125	125	ND	**54**	**56**	20-120	4	34	
Surrogate:											
TCMX						*58*	*58*	*40-109*			
DCB						*65*	*66*	*30-112*			

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-04
Client ID: B-5-3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**210**	3.2
Cadmium	6010B	**ND**	0.65
Chromium	6010B	**35**	0.65
Lead	6010B	**12**	6.5
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.65

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-05
Client ID: B-5-6

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**220**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**29**	0.68
Lead	6010B	**12**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-06
Client ID: B-5-9.5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**180**	3.5
Cadmium	6010B	**ND**	0.69
Chromium	6010B	**22**	0.69
Lead	6010B	**14**	6.9
Mercury	7471A	**ND**	0.35
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.69

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-07
Client ID: B-6-4

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**180**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**21**	0.68
Lead	6010B	**11**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-08
Client ID: B-6-6

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**170**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**23**	0.68
Lead	6010B	**9.0**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-09
Client ID: B-6-9

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**150**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**24**	0.68
Lead	6010B	**10**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-10
Client ID: B-1-12

Analyte	Method	Result	PQL
Arsenic	6010B	**14**	13
Barium	6010B	**220**	3.3
Cadmium	6010B	**ND**	0.67
Chromium	6010B	**22**	0.67
Lead	6010B	**11**	6.7
Mercury	7471A	**ND**	0.33
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.67

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-11
Client ID: B-2-3

Analyte	Method	Result	PQL
Arsenic	6010B	**14**	13
Barium	6010B	**200**	3.2
Cadmium	6010B	**ND**	0.64
Chromium	6010B	**24**	0.64
Lead	6010B	**15**	6.4
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.64

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-12
Client ID: B-2-6

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**170**	3.2
Cadmium	6010B	**ND**	0.65
Chromium	6010B	**26**	0.65
Lead	6010B	**10**	6.5
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.65

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-008-13
Client ID: B-2-10

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**190**	3.3
Cadmium	6010B	**ND**	0.67
Chromium	6010B	**25**	0.67
Lead	6010B	**10**	6.7
Mercury	7471A	**ND**	0.33
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.67

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1112S1&MB1112S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**139**	**141**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.4**	**17.0**	2	0.50	
Lead	**8.86**	**8.85**	0	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.4**	93	**94.7**	95	2	
Barium	100	**239**	100	**238**	99	0	
Cadmium	50	**48.6**	97	**48.4**	97	0	
Chromium	100	**112**	95	**111**	94	1	
Lead	250	**244**	94	**242**	93	1	
Mercury	0.50	**0.500**	100	**0.501**	100	0	
Selenium	100	**89.1**	89	**94.6**	95	6	
Silver	25	**21.0**	84	**20.4**	82	3	

Date of Report: November 13, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-008
Project: E2008/0804

% MOISTURE

Date Analyzed: 11-6-08

Client ID	Lab ID	% Moisture
		25
		26
		28
B-5-3	11-008-04	23
B-5-6	11-008-05	27
B-5-9.5	11-008-06	28
B-6-4	11-008-07	26
B-6-6	11-008-08	27
B-6-9	11-008-09	27
B-1-12	11-008-10	25
B-2-3	11-008-11	22
B-2-6	11-008-12	23
B-2-10	11-008-13	25

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Laboratory Number: 11-008

Company: BMEC

Project Number: E2008/0804

Project Name: CALBAG

Project Manager: ~~Y. MEYER~~ R. KENT

Sampled by: Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
		10-30-08																	X
4	B-5-3		~~1300~~ 1304	SOIL	3							X	X			X			
5	B-5-6		1320	SOIL	3	X		X				X	X	X		X			
6	B-5-9.5		1330	SOIL	3	X		X				X	X	X		X			
7	B-6-~~X~~4		1350	SOIL	3							X	X			X			
8	B-6-6		1355	SOIL	3							X	X			X			
9	B-6-9		1400	SOIL	3							X	X			X			

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

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OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: BMEC, INC
Project Number: E2008/0804
Project Name: CALBAG
Project Manager: ~~Y. MEYER~~ R. KENT
Sampled by: Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 11-008

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
10	~~B-1-12~~ B-1-12	10-30-08	1500	Soil	3							X	X			X			X
11	B-2-3	↓	1550	Soil	3							X	X			X			↓
12	B-2-6	↓	1555	Soil	3							X	X			X			↓
13	B-2-10	↓	1605	Soil	3							X	X			X			↓

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				

Comments/Special Instructions:

Reviewed by/Date

Reviewed by/Date

Chromatograms with final report [ ]

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OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 19, 2008

Yancy Meyer
Blue Mountain Environmental, Inc.
90 Baldwin Road
Walla Walla, WA 99362

Re: Analytical Data for Project E2008/0804
Laboratory Reference No. 0811-009

Dear Yancy:

Enclosed are the analytical results and associated quality control data for samples submitted on November 4, 2008.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

Case Narrative

Samples were collected on October 31 and November 1, 2008 and received by the laboratory on November 4, 2008. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-HCID

Date Extracted: 11-6-08
Date Analyzed: 11-6-08

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	**MW1-S-3**	**B4-S-03**	**B3-S-04**
Lab ID:	11-009-07	11-009-13	11-009-16
Gasoline:	**ND**	**ND**	**ND**
PQL:	22	26	23
Diesel Fuel:	**ND**	**ND**	**ND**
PQL:	56	65	57
Lube Oil:	**ND**	**ND**	**ND**
PQL:	110	130	110
Surrogate Recovery:			
o-Terphenyl	86%	88%	93%
Flags:	Y	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-HCID
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-6-08
Date Analyzed:	11-6-08
Matrix:	Soil
Units:	mg/kg (ppm)

Lab ID:	MB1106S1
Gasoline:	**ND**
PQL:	20
Diesel Fuel:	**ND**
PQL:	50
Lube Oil:	**ND**
PQL:	100
Surrogate Recovery:	
o-Terphenyl	87%
Flags	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx

Date Extracted: 10-10-08
Date Analyzed: 10-10&11-08

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	**MW1-S-3**	**B4-S-03**	**B3-S-04**
Lab ID:	11-009-07	11-009-13	11-009-16
Diesel Range:	**ND**	**ND**	**ND**
PQL:	32	33	28
Identification:	---	---	---
Lube Oil Range:	**ND**	**ND**	**ND**
PQL:	63	65	57
Identification:	---	---	---
Surrogate Recovery			
o-Terphenyl:	74%	83%	81%
Flags:	Y	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-10-08
Date Analyzed:	11-10-08
Matrix:	Soil
Units:	mg/kg (ppm)

Lab ID:	MB1110S1
Diesel Range:	**ND**
PQL:	25
Identification:	---
Lube Oil Range:	**ND**
PQL:	50
Identification:	---
Surrogate Recovery	
o-Terphenyl:	110%
Flags:	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	MB1111S1
Diesel Range:	**ND**
PQL:	25
Identification:	---
Lube Oil Range:	**ND**
PQL:	50
Identification:	---
Surrogate Recovery	
o-Terphenyl:	84%
Flags:	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-10-08
Date Analyzed: 11-10-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	11-034-07	11-034-07 DUP
Diesel Range:	**ND**	**ND**
PQL:	25	25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	77%	88%
Flags:	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID:	11-050-01	11-050-01 DUP
Diesel Range:	**242**	**231**
PQL:	25	25
RPD:	5	
Surrogate Recovery		
o-Terphenyl:	74%	77%
Flags:	Y	Y

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW2-S-05**					
Laboratory ID:	11-009-01					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*72*	*39 - 110*				
2-Fluorobiphenyl	*61*	*41 - 107*				
Terphenyl-d14	*81*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW2-S-10**					
Laboratory ID:	11-009-02					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*72*	*39 - 110*				
2-Fluorobiphenyl	*59*	*41 - 107*				
Terphenyl-d14	*73*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW2-S-15**					
Laboratory ID:	11-009-03					
Naphthalene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0078	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*62*	*39 - 110*				
2-Fluorobiphenyl	*55*	*41 - 107*				
Terphenyl-d14	*75*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-S-3**					
Laboratory ID:	11-009-07					
Naphthalene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Acenaphthylene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Acenaphthene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Fluorene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Phenanthrene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Anthracene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Fluoranthene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Pyrene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Chrysene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0084	EPA 8270/SIM	11-11-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*64*	*39 - 110*				
2-Fluorobiphenyl	*55*	*41 - 107*				
Terphenyl-d14	*75*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-S-6**					
Laboratory ID:	11-009-08					
Naphthalene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0088	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*77*	*39 - 110*				
2-Fluorobiphenyl	*65*	*41 - 107*				
Terphenyl-d14	*76*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-S-11**					
Laboratory ID:	11-009-09					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Fluorene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Anthracene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Pyrene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Chrysene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	11-10-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*66*	*39 - 110*				
2-Fluorobiphenyl	*58*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-S-03**					
Laboratory ID:	11-009-10					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**0.24**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**0.039**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**1.7**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**1.4**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**1.7**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**2.4**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**3.0**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**0.82**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**1.4**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**1.0**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**0.52**	0.0080	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**1.3**	0.080	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*87*	*39 - 110*				
2-Fluorobiphenyl	*76*	*41 - 107*				
Terphenyl-d14	*76*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-S-06**					
Laboratory ID:	11-009-11					
Naphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*66*	*39 - 110*				
2-Fluorobiphenyl	*47*	*41 - 107*				
Terphenyl-d14	*70*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-S-09**					
Laboratory ID:	11-009-12					
Naphthalene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0085	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*66*	*39 - 110*				
2-Fluorobiphenyl	*53*	*41 - 107*				
Terphenyl-d14	*67*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B4-S-03**					
Laboratory ID:	11-009-13					
Naphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0087	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*62*	*41 - 107*				
Terphenyl-d14	*72*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B4A-S-06**					
Laboratory ID:	11-009-14					
Naphthalene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0084	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*59*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B4A-S-09**					
Laboratory ID:	11-009-15					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*62*	*39 - 110*				
2-Fluorobiphenyl	*44*	*41 - 107*				
Terphenyl-d14	*56*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B3-S-04**					
Laboratory ID:	11-009-16					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*67*	*39 - 110*				
2-Fluorobiphenyl	*58*	*41 - 107*				
Terphenyl-d14	*80*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B3-S-06**					
Laboratory ID:	11-009-17					
Naphthalene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**0.0077**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**0.021**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**0.023**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**0.010**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**0.017**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**0.025**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**0.020**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**0.017**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**0.023**	0.0074	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*68*	*39 - 110*				
2-Fluorobiphenyl	*61*	*41 - 107*				
Terphenyl-d14	*74*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B3-S-09**					
Laboratory ID:	11-009-24					
Naphthalene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
2-Methylnaphthalene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
1-Methylnaphthalene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthylene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Acenaphthene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Fluorene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Phenanthrene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Anthracene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Fluoranthene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Pyrene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]anthracene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Chrysene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[b]fluoranthene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[k]fluoranthene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Benzo[g,h,i]perylene	**ND**	0.0082	EPA 8270/SIM	11-10-08	11-12-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*85*	*39 - 110*				
2-Fluorobiphenyl	*68*	*41 - 107*				
Terphenyl-d14	*76*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1107S2					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-7-08	11-10-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*70*	*39 - 110*				
2-Fluorobiphenyl	*61*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB1110S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-10-08	11-11-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*60*	*39 - 110*				
2-Fluorobiphenyl	*54*	*41 - 107*				
Terphenyl-d14	*77*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-03										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0511**	**0.0529**	0.0833	0.0833	ND	61	64	45 - 94	3	24	
Acenaphthylene	**0.0565**	**0.0619**	0.0833	0.0833	ND	68	74	51 - 104	9	25	
Acenaphthene	**0.0532**	**0.0580**	0.0833	0.0833	ND	64	70	53 - 103	9	21	
Fluorene	**0.0585**	**0.0636**	0.0833	0.0833	ND	70	76	57 - 107	8	19	
Phenanthrene	**0.0634**	**0.0659**	0.0833	0.0833	ND	76	79	61 - 104	4	17	
Anthracene	**0.0649**	**0.0679**	0.0833	0.0833	ND	78	82	58 - 102	5	14	
Fluoranthene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	69 - 109	2	27	
Pyrene	**0.0710**	**0.0727**	0.0833	0.0833	ND	85	87	71 - 114	2	27	
Benzo[a]anthracene	**0.0664**	**0.0673**	0.0833	0.0833	ND	80	81	61 - 123	1	18	
Chrysene	**0.0698**	**0.0710**	0.0833	0.0833	ND	84	85	66 - 124	2	19	
Benzo[b]fluoranthene	**0.0748**	**0.0752**	0.0833	0.0833	ND	90	90	72 - 114	1	26	
Benzo[k]fluoranthene	**0.0718**	**0.0720**	0.0833	0.0833	ND	86	86	70 - 115	0	17	
Benzo[a]pyrene	**0.0679**	**0.0687**	0.0833	0.0833	ND	82	82	57 - 104	1	18	
Indeno(1,2,3-c,d)pyrene	**0.0751**	**0.0757**	0.0833	0.0833	ND	90	91	63 - 121	1	20	
Dibenz[a,h]anthracene	**0.0762**	**0.0766**	0.0833	0.0833	ND	91	92	62 - 125	1	15	
Benzo[g,h,i]perylene	**0.0746**	**0.0748**	0.0833	0.0833	ND	90	90	64 - 117	0	21	
Surrogate:											
Nitrobenzene-d5						*66*	*68*	*39 - 110*			
2-Fluorobiphenyl						*57*	*61*	*41 - 107*			
Terphenyl-d14						*76*	*77*	*54 - 126*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-09										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0429**	**0.0466**	0.0833	0.0833	ND	52	56	45 - 94	8	24	
Acenaphthylene	**0.0485**	**0.0513**	0.0833	0.0833	ND	58	62	51 - 104	6	25	
Acenaphthene	**0.0465**	**0.0488**	0.0833	0.0833	ND	56	59	53 - 103	5	21	
Fluorene	**0.0489**	**0.0520**	0.0833	0.0833	ND	59	62	57 - 107	6	19	
Phenanthrene	**0.0559**	**0.0565**	0.0833	0.0833	ND	67	68	61 - 104	1	17	
Anthracene	**0.0540**	**0.0543**	0.0833	0.0833	ND	65	65	58 - 102	1	14	
Fluoranthene	**0.0639**	**0.0636**	0.0833	0.0833	ND	77	76	69 - 109	0	27	
Pyrene	**0.0651**	**0.0646**	0.0833	0.0833	ND	78	78	71 - 114	1	27	
Benzo[a]anthracene	**0.0587**	**0.0588**	0.0833	0.0833	ND	70	71	61 - 123	0	18	
Chrysene	**0.0641**	**0.0637**	0.0833	0.0833	ND	77	76	66 - 124	1	19	
Benzo[b]fluoranthene	**0.0630**	**0.0648**	0.0833	0.0833	ND	76	78	72 - 114	3	26	
Benzo[k]fluoranthene	**0.0638**	**0.0629**	0.0833	0.0833	ND	77	76	70 - 115	1	17	
Benzo[a]pyrene	**0.0574**	**0.0577**	0.0833	0.0833	ND	69	69	57 - 104	1	18	
Indeno(1,2,3-c,d)pyrene	**0.0668**	**0.0669**	0.0833	0.0833	ND	80	80	63 - 121	0	20	
Dibenz[a,h]anthracene	**0.0687**	**0.0688**	0.0833	0.0833	ND	82	83	62 - 125	0	15	
Benzo[g,h,i]perylene	**0.0682**	**0.0676**	0.0833	0.0833	ND	82	81	64 - 117	1	21	
Surrogate:											
Nitrobenzene-d5						*61*	*70*	*39 - 110*			
2-Fluorobiphenyl						*52*	*55*	*41 - 107*			
Terphenyl-d14						*71*	*67*	*54 - 126*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1114S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
Nitrobenzene-d5	*57*	*39 - 110*				
2-Fluorobiphenyl	*64*	*41 - 107*				
Terphenyl-d14	*80*	*54 - 126*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1114S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0493**	**0.0507**	0.0833	0.0833	59	61	45 - 94	3	24	
Acenaphthylene	**0.0661**	**0.0647**	0.0833	0.0833	79	78	51 - 104	2	25	
Acenaphthene	**0.0634**	**0.0651**	0.0833	0.0833	76	78	53 - 103	3	21	
Fluorene	**0.0704**	**0.0712**	0.0833	0.0833	85	85	57 - 107	1	19	
Phenanthrene	**0.0717**	**0.0748**	0.0833	0.0833	86	90	61 - 104	4	17	
Anthracene	**0.0721**	**0.0756**	0.0833	0.0833	87	91	58 - 102	5	14	
Fluoranthene	**0.0756**	**0.0793**	0.0833	0.0833	91	95	69 - 109	5	27	
Pyrene	**0.0766**	**0.0809**	0.0833	0.0833	92	97	71 - 114	5	27	
Benzo[a]anthracene	**0.0686**	**0.0717**	0.0833	0.0833	82	86	61 - 123	4	18	
Chrysene	**0.0736**	**0.0777**	0.0833	0.0833	88	93	66 - 124	5	19	
Benzo[b]fluoranthene	**0.0809**	**0.0844**	0.0833	0.0833	97	101	72 - 114	4	26	
Benzo[k]fluoranthene	**0.0769**	**0.0829**	0.0833	0.0833	92	100	70 - 115	8	17	
Benzo[a]pyrene	**0.0741**	**0.0788**	0.0833	0.0833	89	95	57 - 104	6	18	
Indeno(1,2,3-c,d)pyrene	**0.0787**	**0.0822**	0.0833	0.0833	94	99	63 - 121	4	20	
Dibenz[a,h]anthracene	**0.0788**	**0.0824**	0.0833	0.0833	95	99	62 - 125	4	15	
Benzo[g,h,i]perylene	**0.0772**	**0.0809**	0.0833	0.0833	93	97	64 - 117	5	21	
Surrogate:										
Nitrobenzene-d5					*65*	*65*	*39 - 110*			
2-Fluorobiphenyl					*71*	*70*	*41 - 107*			
Terphenyl-d14					*81*	*86*	*54 - 126*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW2-S-05**					
Laboratory ID:	11-009-01					
Aroclor 1016	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*85*	*35-127*				
Client ID:	**MW2-S-10**					
Laboratory ID:	11-009-02					
Aroclor 1016	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*84*	*35-127*				
Client ID:	**MW2-S-15**					
Laboratory ID:	11-009-03					
Aroclor 1016	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.058	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*83*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-S-3**					
Laboratory ID:	11-009-07					
Aroclor 1016	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*81*	*35-127*				
Client ID:	**MW1-S-6**					
Laboratory ID:	11-009-08					
Aroclor 1016	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.066	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*91*	*35-127*				
Client ID:	**MW1-S-11**					
Laboratory ID:	11-009-09					
Aroclor 1016	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*88*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-S-03**					
Laboratory ID:	11-009-10					
Aroclor 1016	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.060	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*80*	*35-127*				
Client ID:	**MW3-S-06**					
Laboratory ID:	11-009-11					
Aroclor 1016	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*80*	*35-127*				
Client ID:	**MW3-S-09**					
Laboratory ID:	11-009-12					
Aroclor 1016	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.064	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*90*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B4-S-03**					
Laboratory ID:	11-009-13					
Aroclor 1016	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.065	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*91*	*35-127*				
Client ID:	**B4A-S-06**					
Laboratory ID:	11-009-14					
Aroclor 1016	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.063	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*79*	*35-127*				
Client ID:	**B4A-S-09**					
Laboratory ID:	11-009-15					
Aroclor 1016	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.068	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*72*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B3-S-04**					
Laboratory ID:	11-009-16					
Aroclor 1016	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**0.11**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.057	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*96*	*35-127*				
Client ID:	**B3-S-06**					
Laboratory ID:	11-009-17					
Aroclor 1016	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**0.069**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.056	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*101*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**B3-S-09**					
Laboratory ID:	11-009-24					
Aroclor 1016	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.062	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*76*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1105S1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-5-08	11-5-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*90*	*35-127*				
Laboratory ID:	MB1106S1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-6-08	11-6-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*98*	*35-127*				

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-03										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.403**	**0.382**	0.500	0.500	ND	**81**	**76**	24-128	5	14	
Surrogate:											
DCB						*84*	*81*	*35-127*			
Laboratory ID:	11-009-24										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.425**	**0.401**	0.500	0.500	ND	**85**	**80**	24-128	6	14	
Surrogate:											
DCB						*73*	*72*	*35-127*			
SPIKE BLANKS											
Laboratory ID:	SB1105S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.428**	**0.397**	0.500	0.500	N/A	**86**	**79**	69-119	8	15	
Surrogate:											
DCB						*89*	*81*	*35-127*			
Laboratory ID:	SB1106S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.388**	**0.445**	0.500	0.500	N/A	**78**	**89**	69-119	14	15	
Surrogate:											
DCB						*69*	*72*	*35-127*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114S2					
Aroclor 1016	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*77*	*35-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-009-19										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.351**	**0.316**	0.500	0.500	ND	**70**	**63**	24-128	10	14	
Surrogate:											
DCB						*74*	*68*	*35-127*			

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-01
Client ID: MW2-S-05

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**160**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**19**	0.68
Lead	6010B	**14**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-02
Client ID: MW2-S-10

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**150**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**21**	0.68
Lead	6010B	**8.0**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-03
Client ID: MW2-S-15

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	12
Barium	6010B	**120**	2.9
Cadmium	6010B	**ND**	0.58
Chromium	6010B	**13**	0.58
Lead	6010B	**6.1**	5.8
Mercury	7471A	**ND**	0.29
Selenium	6010B	**ND**	12
Silver	6010B	**ND**	0.58

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-07
Client ID: MW1-S-3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**190**	3.2
Cadmium	6010B	**ND**	0.63
Chromium	6010B	**19**	0.63
Lead	6010B	**150**	6.3
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.63

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-08
Client ID: MW1-S-6

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**170**	3.3
Cadmium	6010B	**ND**	0.66
Chromium	6010B	**24**	0.66
Lead	6010B	**12**	6.6
Mercury	7471A	**ND**	0.33
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.66

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-09
Client ID: MW1-S-11

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**200**	3.1
Cadmium	6010B	**ND**	0.63
Chromium	6010B	**21**	0.63
Lead	6010B	**6.5**	6.3
Mercury	7471A	**ND**	0.31
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.63

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-10
Client ID: MW3-S-03

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	12
Barium	6010B	**200**	3.0
Cadmium	6010B	**ND**	0.60
Chromium	6010B	**17**	0.60
Lead	6010B	**200**	6.0
Mercury	7471A	**0.65**	0.30
Selenium	6010B	**ND**	12
Silver	6010B	**ND**	0.60

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-11
Client ID: MW3-S-06

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**170**	3.2
Cadmium	6010B	**ND**	0.65
Chromium	6010B	**27**	0.65
Lead	6010B	**13**	6.5
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.65

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-12
Client ID: MW3-S-09

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**150**	3.2
Cadmium	6010B	**ND**	0.64
Chromium	6010B	**17**	0.64
Lead	6010B	**8.1**	6.4
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.64

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-13
Client ID: B4-S-03

Analyte	Method	Result	PQL
Arsenic	6010B	**17**	13
Barium	6010B	**210**	3.2
Cadmium	6010B	**1.1**	0.65
Chromium	6010B	**21**	0.65
Lead	6010B	**29**	6.5
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.65

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-14
Client ID: B4A-S-06

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	13
Barium	6010B	**210**	3.2
Cadmium	6010B	**ND**	0.63
Chromium	6010B	**19**	0.63
Lead	6010B	**9.9**	6.3
Mercury	7471A	**ND**	0.32
Selenium	6010B	**ND**	13
Silver	6010B	**ND**	0.63

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-15
Client ID: B4A-S-09

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	14
Barium	6010B	**160**	3.4
Cadmium	6010B	**ND**	0.68
Chromium	6010B	**19**	0.68
Lead	6010B	**12**	6.8
Mercury	7471A	**ND**	0.34
Selenium	6010B	**ND**	14
Silver	6010B	**ND**	0.68

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-16
Client ID: B3-S-04

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	11
Barium	6010B	**110**	2.8
Cadmium	6010B	**ND**	0.57
Chromium	6010B	**20**	0.57
Lead	6010B	**140**	5.7
Mercury	7471A	**ND**	0.28
Selenium	6010B	**ND**	11
Silver	6010B	**ND**	0.57

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-17
Client ID: B3-S-06

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	11
Barium	6010B	**110**	2.8
Cadmium	6010B	**ND**	0.56
Chromium	6010B	**13**	0.56
Lead	6010B	**81**	5.6
Mercury	7471A	**ND**	0.28
Selenium	6010B	**ND**	11
Silver	6010B	**ND**	0.56

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 11-11&12-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-24
Client ID: B3-S-09

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	12
Barium	6010B	**160**	3.1
Cadmium	6010B	**ND**	0.62
Chromium	6010B	**26**	0.62
Lead	6010B	**12**	6.2
Mercury	7471A	**ND**	0.31
Selenium	6010B	**ND**	12
Silver	6010B	**ND**	0.62

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1111S2&MB1111S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1112S1&MB1112S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**103**	**101**	3	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**10.9**	**9.85**	10	0.50	
Lead	**5.25**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**139**	**141**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.4**	**17.0**	2	0.50	
Lead	**8.86**	**8.85**	0	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-11-08
Date Analyzed: 11-11&12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.7**	94	**92.0**	92	2	
Barium	100	**202**	99	**197**	93	3	
Cadmium	50	**49.2**	98	**49.1**	98	0	
Chromium	100	**106**	95	**106**	95	1	
Lead	250	**246**	96	**245**	96	0	
Mercury	0.50	**0.520**	104	**0.524**	105	1	
Selenium	100	**94.4**	94	**92.5**	92	2	
Silver	25	**21.2**	85	**21.0**	84	1	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-12-08
Date Analyzed: 11-12-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-22

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.4**	93	**94.7**	95	2	
Barium	100	**239**	100	**238**	99	0	
Cadmium	50	**48.6**	97	**48.4**	97	0	
Chromium	100	**112**	95	**111**	94	1	
Lead	250	**244**	94	**242**	93	1	
Mercury	0.50	**0.500**	100	**0.501**	100	0	
Selenium	100	**89.1**	89	**94.6**	95	6	
Silver	25	**21.0**	84	**20.4**	82	3	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1117S1&MB1117S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-19

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**10.1**	NA	10	
Barium	**196**	**197**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**19.2**	**18.9**	1	0.50	
Lead	**12.7**	**12.2**	4	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17&18-08

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-009-19

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.6**	100	**99.4**	99	0	
Barium	100	**290**	94	**287**	91	1	
Cadmium	50	**48.2**	96	**47.9**	96	1	
Chromium	100	**112**	93	**111**	92	1	
Lead	250	**247**	94	**245**	93	1	
Mercury	0.50	**0.501**	100	**0.498**	100	1	
Selenium	100	**94.2**	94	**92.9**	93	1	
Silver	25	**20.2**	81	**20.1**	80	0	

Date of Report: November 19, 2008
Samples Submitted: November 4, 2008
Laboratory Reference: 0811-009
Project: E2008/0804

% MOISTURE

Date Analyzed: 11-5&10-08

Client ID	Lab ID	% Moisture
MW2-S-05	11-009-01	27
MW2-S-10	11-009-02	26
MW2-S-15	11-009-03	14
MW1-S-3	11-009-07	21
MW1-S-6	11-009-08	24
MW1-S-11	11-009-09	20
MW3-S-03	11-009-10	17
MW3-S-06	11-009-11	23
MW3-S-09	11-009-12	22
B4-S-03	11-009-13	23
B4A-S-06	11-009-14	21
B4A-S-09	11-009-15	26
B3-S-04	11-009-16	12
B3-S-06	11-009-17	10
B3-S-09	11-009-24	19

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Laboratory Number: 11·009

Company:	BMEC Inc
Project Number:	E2008/0804
Project Name:	CALBAG
Project Manager:	R. KENT
Sampled by:	Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
1	MW2-S-05	10-31-08	0910	Soil	3							X	X			X			X
2	MW2-S-10		0925	Soil	3							X	X			X			
3	MW2-S-15		0935	Soil	3							X	X			X			
7	MW1-S-3		1605	Soil	3	X		X				X	X			X			
8	MW1-S-6		1610	Soil	3							X	X			X			
9	MW1-S-11		1615	Soil	3							X	X			X			

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

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Chain of Custody

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Laboratory Number: 11-009

Company:	BMEC, INC
Project Number:	E2008/0804
Project Name:	CALBAG
Project Manager:	R. KENT
Sampled by:	Y. MEYER

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days) (TPH analysis 5 working days)
- ☐ ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664								% Moisture
10	MW3-S-03	11-1-08	0930	Soil	~~3~~4 DB							X	X			X										X
11	MW3-S-06		0935	Soil	~~4~~3							X	X			X										
12	MW3-S-09		0945	Soil								X	X			X										
13	B4-S-03		1000	Soil		X	~~X~~	X				X	X			X										
14	B4A-S-06		1030	Soil								X	X			X										
15	B4A-S-09		1035	Soil								X	X			X										
16	B3-S-04		1115	Soil		X		X				X	X			X										
17	B3-S-06		1120	Soil								X	X			X										X

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1200
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Special Instructions:

X Added 11/13/08. DB

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OnSite Environmental Inc.

Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: BMEG INC

Project Number:

Project Name: CALBAG

Project Manager: R. KENT

Sampled by: Y. MEYER

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 11-009

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	~~TCLP Metals~~ TOTAL RCRA 8	HEM by 1664							% Moisture
		11-1-08	1345																						X
24	B3-S-09	↓	1125	↓	↓							X	X				X								X

	Signature	Company	Date	Time
Relinquished by	[signature]	BMEC	11-3-08	1250
Received by	[signature]	OSE	11/4/08	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

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LABORATORY PAGES REMOVED RELATED TO NON-PROJECT SAMPLES DUE TO PRIVLEGED AND CONFIDENTIAL

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 24, 2008

Peter Trabusiner
Blue Mountain Environmental, Inc.
1500 Adair Drive
Richland, WA 99352

Re:	Analytical Data for Project 080819
	Laboratory Reference No. 0811-073

Dear Peter:

Enclosed are the analytical results and associated quality control data for samples submitted on November 13, 2008.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

Case Narrative

Samples were collected on November 10, 2008 and received by the laboratory on November 13, 2008. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

The spike blank and spike blank duplicate had two RPD's out of control limits. Because the recoveries for these compounds were within control limits and the holding times for the samples had expired, no further action was taken.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Client ID:	**MW-1-40/50**			**MW-2-39/49**		
Lab ID:	11-073-01			11-073-02		
	Result	Flags	PQL	**Result**	Flags	PQL
TPH-Gas	**ND**		100	**ND**		100
Surrogate Recovery:						
Fluorobenzene	98%			101%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Client ID:	**MW-3-45/55**					
Lab ID:	11-073-03					
	Result	Flags	PQL		Flags	PQL
TPH-Gas	**ND**		100			100
Surrogate Recovery:						
Fluorobenzene	100%			100%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1113W2

	Result	Flags	PQL
TPH-Gas	**ND**		100
Surrogate Recovery:			
Fluorobenzene	104%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Gx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-13-08
Date Analyzed: 11-13-08

Matrix: Water
Units: ug/L (ppb)

Lab ID:	11-072-04	11-072-04		
	Original	**Duplicate**	**RPD**	**Flags**
TPH-Gas	**ND**	**ND**	NA	
Surrogate Recovery:				
Fluorobenzene	102%	103%		

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: mg/L (ppm)

Client ID:	**MW-1-40/50**	**MW-2-39/49**	**MW-3-45/55**
Lab ID:	11-073-01	11-073-02	11-073-03
Diesel Range:	**ND**	**ND**	**ND**
PQL:	0.25	0.25	0.25
Identification:	---	---	---
Lube Oil Range:	**ND**	**ND**	**ND**
PQL:	0.40	0.40	0.40
Identification:	---	---	---
Surrogate Recovery			
o-Terphenyl:	84%	76%	75%
Flags:	Y	Y	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx

Date Extracted:	11-19-08
Date Analyzed:	11-19-08
Matrix:	Water
Units:	mg/L (ppm)

Client ID:	
Lab ID:	
Diesel Range:	
PQL:	
Identification:	
Lube Oil Range:	
PQL:	
Identification:	
Surrogate Recovery	
o-Terphenyl:	85%
Flags:	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-19-08
Date Analyzed:	11-19-08
Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB1119W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	80%
Flags:	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: mg/L (ppm)

Lab ID:	11-073-01	11-073-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.24
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	84%	70%
Flags:	Y	Y

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 11-17-08
Date Analyzed: 11-17-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01
Client ID: **MW-1-40/50**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	1.3		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 11-073-01
Client ID: MW-1-40/50

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	86	71-126
Toluene-d8	95	76-116
4-Bromofluorobenzene	79	70-123

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 11-17-08
Date Analyzed: 11-17-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-02
Client ID: MW-2-39/49

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 11-073-02
Client ID: MW-2-39/49

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	93	71-126
Toluene-d8	97	76-116
4-Bromofluorobenzene	83	70-123

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 11-17-08
Date Analyzed: 11-17-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-03
Client ID: MW-3-45/55

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	0.44		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	0.35		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 11-073-03
Client ID: MW-3-45/55

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	96	71-126
Toluene-d8	97	76-116
4-Bromofluorobenzene	87	70-123

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	11-17-08
Date Analyzed:	11-17-08
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1117W1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB1117W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	94	71-126
Toluene-d8	98	76-116
4-Bromofluorobenzene	85	70-123

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 11-17-08
Date Analyzed: 11-17-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB1117W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits
1,1-Dichloroethene	10.0	10.5	105	10.3	103	70-130
Benzene	10.0	9.95	100	9.84	98	70-130
Trichloroethene	10.0	10.6	106	10.5	105	70-116
Toluene	10.0	10.3	103	10.3	103	76-119
Chlorobenzene	10.0	10.1	101	10.0	100	77-112

	RPD	RPD Limit	Flags
1,1-Dichloroethene	2	20	
Benzene	1	16	
Trichloroethene	1	16	
Toluene	0	15	
Chlorobenzene	1	15	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	11-073-01					
Naphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*78*	*34 - 100*				
Pyrene-d10	*91*	*40 - 100*				
Terphenyl-d14	*83*	*48 - 112*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-2-39/49**					
Laboratory ID:	11-073-02					
Naphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*34 - 100*				
Pyrene-d10	*94*	*40 - 100*				
Terphenyl-d14	*90*	*48 - 112*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-45/55**					
Laboratory ID:	11-073-03					
Naphthalene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.094	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*73*	*34 - 100*				
Pyrene-d10	*90*	*40 - 100*				
Terphenyl-d14	*86*	*48 - 112*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1114W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Fluorene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Anthracene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Pyrene	**ND**	0.10	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Chrysene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	11-14-08	11-17-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*34 - 100*				
Pyrene-d10	*91*	*40 - 100*				
Terphenyl-d14	*85*	*48 - 112*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1114W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.394**	**0.380**	0.500	0.500	79	76	20 - 116	4	38	
Acenaphthylene	**0.439**	**0.355**	0.500	0.500	88	71	23 - 109	21	29	
Acenaphthene	**0.420**	**0.396**	0.500	0.500	84	79	28 - 108	6	30	
Fluorene	**0.444**	**0.411**	0.500	0.500	89	82	34 - 111	8	25	
Phenanthrene	**0.428**	**0.402**	0.500	0.500	86	80	40 - 107	6	17	
Anthracene	**0.473**	**0.399**	0.500	0.500	95	80	38 - 107	17	20	
Fluoranthene	**0.477**	**0.447**	0.500	0.500	95	89	46 - 114	6	15	
Pyrene	**0.463**	**0.434**	0.500	0.500	93	87	50 - 116	6	16	
Benzo[a]anthracene	**0.411**	**0.384**	0.500	0.500	82	77	47 - 115	7	15	
Chrysene	**0.408**	**0.370**	0.500	0.500	82	74	52 - 118	10	16	
Benzo[b]fluoranthene	**0.454**	**0.437**	0.500	0.500	91	87	51 - 118	4	17	
Benzo[k]fluoranthene	**0.439**	**0.384**	0.500	0.500	88	77	53 - 116	13	19	
Benzo[a]pyrene	**0.460**	**0.233**	0.500	0.500	92	47	42 - 111	66	21	L
Indeno(1,2,3-c,d)pyrene	**0.430**	**0.385**	0.500	0.500	86	77	47 - 120	11	18	
Dibenz[a,h]anthracene	**0.398**	**0.323**	0.500	0.500	80	65	48 - 122	21	18	L
Benzo[g,h,i]perylene	**0.403**	**0.342**	0.500	0.500	81	68	47 - 116	16	17	
Surrogate:										
2-Fluorobiphenyl					*77*	*71*	*34 - 100*			
Pyrene-d10					*91*	*85*	*40 - 100*			
Terphenyl-d14					*86*	*82*	*48 - 112*			

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	11-073-01					
Aroclor 1016	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1221	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1232	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1242	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1248	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1254	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1260	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1262	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1268	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*79*	*35-135*				
Client ID:	**MW-2-39/49**					
Laboratory ID:	11-073-02					
Aroclor 1016	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1221	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1232	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1242	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1248	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1254	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1260	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1262	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1268	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*81*	*35-135*				
Client ID:	**MW-3-45/55**					
Laboratory ID:	11-073-03					
Aroclor 1016	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1221	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1232	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1242	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1248	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1254	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1260	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1262	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Aroclor 1268	**ND**	0.047	EPA 8082	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*84*	*35-135*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114W1					
Aroclor 1016	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1221	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1232	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1242	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1248	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1254	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1260	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1262	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Aroclor 1268	**ND**	0.050	EPA 8082	11-14-08	11-15-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*81*	*35-135*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1114W1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.410**	**0.384**	0.500	0.500	N/A	**82**	**77**	61-114	7	12	
Surrogate:											
DCB						*85*	*82*	*35-135*			

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE
PESTICIDES by EPA 8081A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	11-073-01					
alpha-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
beta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
delta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Aldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor Epoxide	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
alpha-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4’-DDE	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan I	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Dieldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4’-DDD	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan II	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4’-DDT	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Aldehyde	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Methoxychlor	**ND**	0.0094	EPA 8081	11-14-08	11-14-08	
Endsulfan Sulfate	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Ketone	**ND**	0.019	EPA 8081	11-14-08	11-14-08	
Toxaphene	**ND**	0.047	EPA 8081	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*60*	*30-101*				
DCB	*81*	*30-119*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-2-39/49**					
Laboratory ID:	11-073-02					
alpha-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
beta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
delta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Aldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor Epoxide	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
alpha-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDE	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan I	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Dieldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDD	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan II	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDT	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Aldehyde	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Methoxychlor	**ND**	0.0094	EPA 8081	11-14-08	11-14-08	
Endsulfan Sulfate	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Ketone	**ND**	0.019	EPA 8081	11-14-08	11-14-08	
Toxaphene	**ND**	0.047	EPA 8081	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*66*	*30-101*				
DCB	*82*	*30-119*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE
PESTICIDES by EPA 8081A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-45/55**					
Laboratory ID:	11-073-03					
alpha-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
beta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
delta-BHC	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Aldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Heptachlor Epoxide	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
gamma-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
alpha-Chlordane	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDE	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan I	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Dieldrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDD	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endosulfan II	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
4,4'-DDT	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Aldehyde	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Methoxychlor	**ND**	0.0094	EPA 8081	11-14-08	11-14-08	
Endsulfan Sulfate	**ND**	0.0047	EPA 8081	11-14-08	11-14-08	
Endrin Ketone	**ND**	0.019	EPA 8081	11-14-08	11-14-08	
Toxaphene	**ND**	0.047	EPA 8081	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*56*	*30-101*				
DCB	*79*	*30-119*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE
PESTICIDES by EPA 8081A
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114W1					
alpha-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
gamma-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
beta-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
delta-BHC	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Heptachlor	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Aldrin	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
gamma-Chlordane	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
alpha-Chlordane	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
4,4'-DDE	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endosulfan I	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Dieldrin	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endrin	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
4,4'-DDD	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endosulfan II	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
4,4'-DDT	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endrin Aldehyde	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Methoxychlor	**ND**	0.010	EPA 8081	11-14-08	11-14-08	
Endsulfan Sulfate	**ND**	0.0050	EPA 8081	11-14-08	11-14-08	
Endrin Ketone	**ND**	0.020	EPA 8081	11-14-08	11-14-08	
Toxaphene	**ND**	0.050	EPA 8081	11-14-08	11-14-08	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*59*	*30-101*				
DCB	*84*	*30-119*				

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

ORGANOCHLORINE
PESTICIDES by EPA 8081A
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1114W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0351**	**0.0370**	0.0500	0.0500	N/A	**70**	**74**	46-90	5	19	
Heptachlor	**0.0349**	**0.0376**	0.0500	0.0500	N/A	**70**	**75**	41-91	7	29	
Aldrin	**0.0335**	**0.0361**	0.0500	0.0500	N/A	**67**	**72**	41-80	7	34	
Dieldrin	**0.102**	**0.105**	0.125	0.125	N/A	**82**	**84**	57-96	3	19	
Endrin	**0.0900**	**0.0918**	0.125	0.125	N/A	**72**	**73**	50-98	2	19	
4,4'-DDT	**0.103**	**0.103**	0.125	0.125	N/A	**82**	**83**	53-107	0	18	
Surrogate:											
TCMX						*57*	*58*	*30-101*			
DCB						*83*	*81*	*30-119*			

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01
Client ID: MW-1-40/50

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-02
Client ID: MW-2-39/49

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-03
Client ID: MW-3-45/55

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-19-08
Date Analyzed:	11-19-08
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1119W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	28	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

TOTAL METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 11-19-08
Date Analyzed: 11-19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**114**	103	**116**	106	2	
Arsenic	110	**112**	102	**114**	104	2	
Beryllium	110	**109**	99	**113**	103	4	
Cadmium	110	**112**	102	**114**	104	2	
Chromium	110	**108**	98	**110**	100	2	
Copper	110	**102**	93	**105**	95	3	
Lead	110	**109**	99	**111**	101	2	
Mercury	12.5	**12.5**	100	**12.4**	99	1	
Nickel	110	**106**	97	**109**	99	3	
Selenium	110	**113**	102	**114**	104	1	
Silver	110	**108**	98	**112**	102	4	
Thallium	110	**110**	100	**111**	101	1	
Zinc	110	**115**	105	**117**	107	2	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01
Client ID: MW-1-40/50

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-02
Client ID: MW-2-39/49

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-03
Client ID: MW-3-45/55

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1113D1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	50

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**ND**	**ND**	NA	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	50	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

DISSOLVED METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Filtered: 11-13-08
Date Analyzed: 11-17&19-08

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-073-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	200	**206**	103	**211**	106	2	
Arsenic	200	**209**	105	**208**	104	0	
Beryllium	200	**202**	101	**200**	100	1	
Cadmium	200	**205**	103	**208**	104	1	
Chromium	200	**201**	100	**200**	100	0	
Copper	200	**207**	104	**206**	103	0	
Lead	200	**203**	101	**207**	104	2	
Mercury	12.5	**12.5**	100	**12.6**	101	1	
Nickel	200	**196**	98	**201**	101	3	
Selenium	200	**207**	103	**209**	105	1	
Silver	200	**201**	100	**203**	102	1	
Thallium	200	**203**	102	**206**	103	1	
Zinc	200	**205**	102	**207**	103	1	

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664

Date Extracted: 11-20-08
Date Analyzed: 11-20-08

Matrix: Water
Units: mg/L (ppm)

Client ID:	**MW-1-40/50**	**MW-2-39/49**	**MW-3-45/55**
Lab ID:	11-073-01	11-073-02	11-073-03
Hexane Extractable Material:	**ND**	**ND**	**ND**
PQL:	5.2	5.2	5.2

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-20-08
Date Analyzed:	11-20-08
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB1120W1
Hexane Extractable Material:	**ND**
PQL:	5.0

Date of Report: November 24, 2008
Samples Submitted: November 13, 2008
Laboratory Reference: 0811-073
Project: 080819

HEXANE EXTRACTABLE MATERIAL
OIL AND GREASE
EPA 1664
SB/SBD QUALITY CONTROL

Date Extracted: 11-20-08
Date Analyzed: 11-20-08

Matrix: Water
Units: mg/L (ppm)

Spike Level: 40 ppm

Lab ID:	SB1120W1	SB1120W1Dup
Hexane Extractable Material:	**40.2**	**37.5**
PQL:	5.0	5.0
Percent Recovery:	101	94
Control Limits:	91-110	91-110
RPD:	7	
Control Limits:	15	

Flags:

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Laboratory Number: 11-073

Company: BMEC (GeoPro Geologic Services LLC)
Project Number: 080819
Project Name: Calbag Metals Co. Phase II
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
(TPH analysis 5 working days)
☐ ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/~~BTEX~~	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total ~~RCRA~~ Metals (8) PP	~~TCLP~~ DIS. Metals PP	HEM by 1664	VPH	EPH	TOC				% Moisture
1	MW-1-40/50	11/10/08	1555	W	16		X	X	X			X	X	X		X	X	X			X				
2	MW-2-39/49	11/10/08	1655	W	~~16~~ 17		X	X	X			X	X	X		X	X	X			X				
3	MW-3-45/55	11/10/08	1447	W	~~16~~ 18		X	X	X			X	X	X		X	X	X			X				
	SEE ATTACHMENT FOR REQUESTED ANALYSES																								

	Signature	Company	Date	Time
Relinquished by	[illegible signature]	GeoPro LLC for BMEC	11/12/08	3:30 pm
Received by	Fed Ex Airbill 865347158070			
Relinquished by				
Received by	[illegible signature]	OSE	11/13/08	1000
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
SEE ATTACHMENT (online version scroll)
PCB - Two 1 Liter Amber bottles unpreserved
TPH-Gx/BTEX-Two 40 mL Voa Vials preserved with Hydrochloric acid
TPH-Diesel-Two 500 mL Amber bottles preserved with Hydrochloric acid
Oil/Grease-Two 1 Liter clear widemouth jars preserved with Hydrochloric acid
Total Metals- One 500 mL Poly bottle preserved with Nitric acid

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

11/19/2008

OnSite Environmental Inc
14648 NE 95th Street
Redmond, WA 98052
Attn: David Baumeister

Project: 11-073/080819
Sample Matrix: Water
Date Sampled: 11/10/2008
Date Received: 11/14/2008
Spectra Project: 2008110259

Client ID	Spectra #	Analyte	Result	Units	Method
MW-1-40/50	1	Total Organic Carbon	3	mg/L	SM5310 B
MW-2-39/49	2	Total Organic Carbon	25	mg/L	SM5310 B
MW-3-45/55	3	Total Organic Carbon	3	mg/L	SM5310 B

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager

a7/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

11/19/08

OnSite Environmental Inc
14648 NE 95th Street
Redmond WA, 98052
Attn: David Baumeister

Spectra Project #	2008110259
Sample Spiked:	2008110056-1
Spiked Sample Date Analyzed:	11/14/2008
Date Analyzed:	11/19/2008
Units:	mg/L
Applies to Spectra #'s:	1 thru 4

Total Organic Carbon - SM 5310B

Matrix Spike/ Maxtrix Spike Dupilcate Results in Water

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
TOC	4.0	100.0	85.6	81.6	88.8	84.8	3.8

* out of limits
Recovery Limits 60-140%
Sample Conc. of 0.000 = ND

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

11/19/2008

OnSite Environmental Inc
14648 NE 95th Street
Redmond WA, 98052
Attn: David Baumeister

Spectra Project #	2008110259
Sample Spiked:	Blank
Date Analyzed:	11/19/2008
Units:	mg/L
Applies to Spectra Sample #'s:	1 thru 4

Total Organic Carbon - SM 5310B
Blank Spike (LCS), Method Blank Results in Water

	Spike Added	LCS Conc.	LCS %Rec	Method Blank Conc. Units: mg/L
TOC	100.0	83.2	83.2	< 3

* out of limits

LCS Recovery limits 56-126%

Steven G. Hibbs
Laboratory Manager

Spectra Laboratories TOC Logbook # 1
Shimadzu TOC-VCSN
Method:SM 5310B

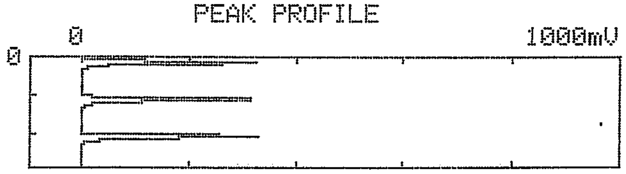
Date	Analyst	Matrix	Sample ID	Wgt/Vol	Result	Comments
11-19-08	SJ	H_2O	500 Cal Std	20 ml	483.0	5-19-C
			100 IC Std		2.6	5-20-A
			MBLK 11-19-08		2.6	
			LCS 11-19-08		83.2	5-20-B
			110259-1		3.2	
			2		24.9	
			dup		25.4	
			3		3.0	
			4		2.3	
			25 Chk Std		25.4	5-19-C

SAMPLE NAME : 500 CAL STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	357.1	473.3	TC5	20	1
2	366.5	485.7	TC5	20	1
3	369.8	490.0	TC5	20	1
MN	364.5	483.0			
SD	6.59	8.69			
CV	1.81 %	1.80 %			

PEAK PROFILE



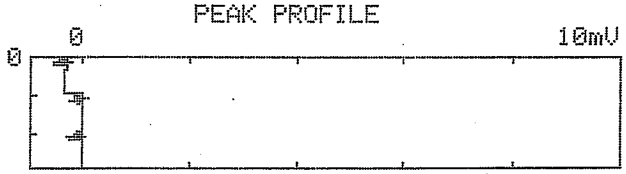
DATE 11(NOV)-19-2008 08:11

SAMPLE NAME : 100 IC STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.218	2.593	TC5	20	1
2	0.208	2.580	TC5	20	1
3	0.224	2.601	TC5	20	1
MN	0.217	2.591			
SD	0.01	0.01			
CV	3.64 %	0.40 %			

PEAK PROFILE



DATE 11(NOV)-19-2008 08:50

SAMPLE NAME : MBLK 11-19-08

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.204	2.574	TC5	20	1
2	0.256	2.643	TC5	20	1
3	0.260	2.649	TC5	20	1
MN	0.240	2.622			
SD	0.03	0.04			
CV	13.1 %	1.59 %			

PEAK PROFILE

DATE 11(NOV)-19-2008 09:03

SAMPLE NAME : LCS 11-19-08

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

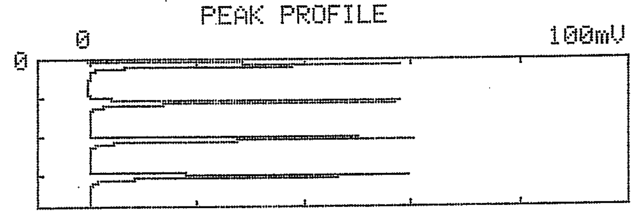
#	AREA	mg/L	C#	INJ	DL
1	60.59	82.22	TC5	20	1
2	60.75	82.43	TC5	20	1

SAMPLE NAME : LCS 11-19-08

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	60.59	82.22	TC5	20	1
2	60.75	82.43	TC5	20	1
3	64.43E	87.28	TC5	20	1
4	62.62	84.89	TC5	20	1
MN	61.32	83.18			
SD	1.13	1.49			
CV	1.84 %	1.79 %			

PEAK PROFILE



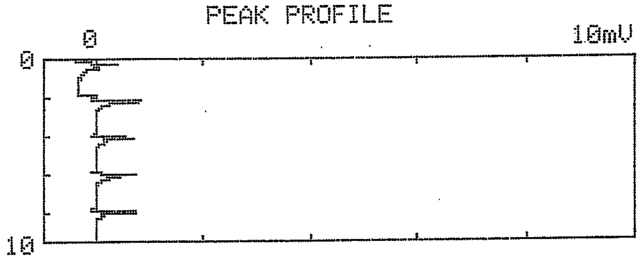
DATE 11(NOV)-19-2008 09:17

SAMPLE NAME : 110259-1

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.937E	3.541	TC5	20	1
2	0.953E	3.562	TC5	20	1
3	0.662	3.178	TC5	20	1
4	0.710	3.242	TC5	20	1
5	0.610	3.110	TC5	20	1
MN	0.661	3.177			
SD	0.05	0.07			
CV	7.53 %	2.07 %			

PEAK PROFILE



DATE 11(NOV)-19-2008 10:47

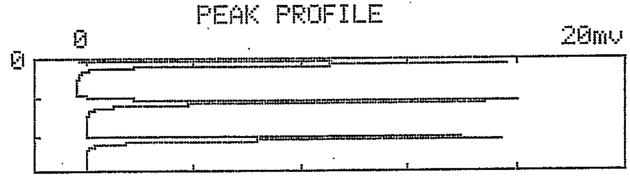
SAMPLE NAME : 110259-2

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	16.92	24.62	TC5	20	1
2	17.41	25.27	TC5	20	1
3	17.01	24.74	TC5	20	1
MN	17.11	24.88			
SD	0.26	0.34			
CV	1.52 %	1.38 %			

PEAK PROFILE

24



DATE 11(NOV)-19-2008 11:17

SAMPLE NAME : 110259-2 DUP

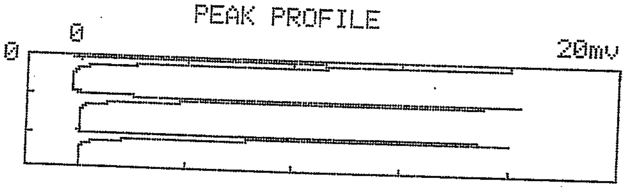
TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,

SAMPLE NAME : 110259-2 DUP

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	17.55	25.45	TC5	20	1
2	17.69	25.64	TC5	20	1
3	17.31	25.14	TC5	20	1
MN	17.52	25.41			
SD	0.19	0.25			
CV	1.10 %	1.00 %			

PEAK PROFILE



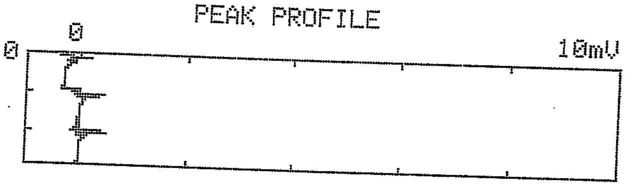
DATE 11(NOV)-19-2008 11:29

SAMPLE NAME : 110259-3

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.607	3.105	TC5	20	1
2	0.432	2.876	TC5	20	1
3	0.501	2.966	TC5	20	1
MN	0.513	2.983			
SD	0.09	0.12			
CV	17.1 %	3.88 %			

PEAK PROFILE



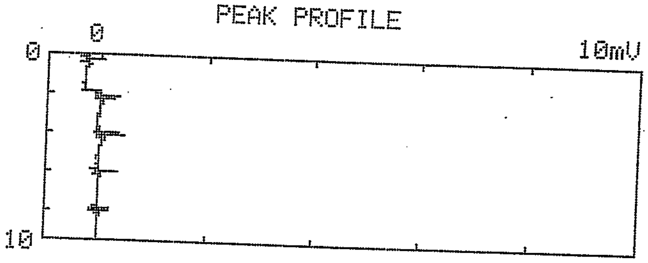
DATE 11(NOV)-19-2008 13:25

SAMPLE NAME : 110259-4

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

#	AREA	mg/L	C#	INJ	DL
1	0.000	2.305	TC5	20	1
2	0.000	2.305	TC5	20	1
3	0.495E	2.958	TC5	20	1
4	0.315E	2.721	TC5	20	1
5	0.070	2.398	TC5	20	1
MN	0.023	2.336			
SD	0.04	0.05			
CV	173 %	2.31 %			

PEAK PROFILE



DATE 11(NOV)-19-2008 13:41

SAMPLE NAME : 25 CHK STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1]

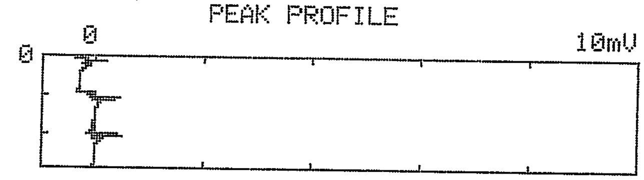
AREA mg/L C# INJ DL

SAMPLE NAME : 110259-3

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1
]

#	AREA	mg/L	C#	INJ	DL
1	0.607	3.105	TC5	20	1
2	0.432	2.876	TC5	20	1
3	0.501	2.966	TC5	20	1
MN	0.513	2.983			
SD	0.09	0.12			
CV	17.1 %	3.88 %			

PEAK PROFILE



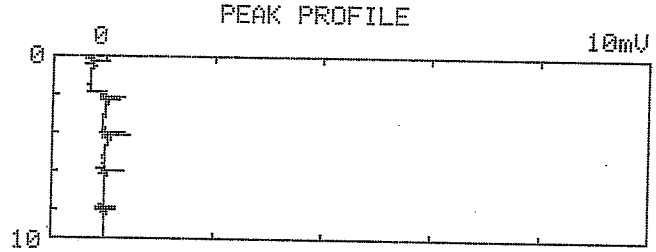
DATE 11(NOV)-19-2008 13:25

SAMPLE NAME : 110259-4

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1
]

#	AREA	mg/L	C#	INJ	DL
1	0.000	2.305	TC5	20	1
2	0.000	2.305	TC5	20	1
3	0.495E	2.958	TC5	20	1
4	0.315E	2.721	TC5	20	1
5	0.070	2.398	TC5	20	1
MN	0.023	2.336			
SD	0.04	0.05			
CV	173 %	2.31 %			

PEAK PROFILE



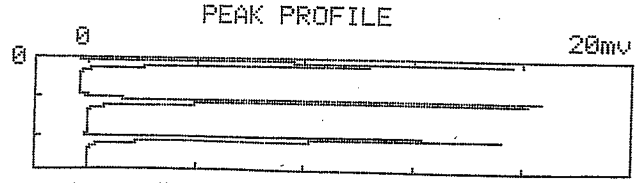
DATE 11(NOV)-19-2008 13:41

SAMPLE NAME : 25 CHK STD

TYPE : NPOC
[INJ 20uL,C# TC5 ,DL 1,SP 3.0min,
ACID 0.0%,#WASH 1
]

#	AREA	mg/L	C#	INJ	DL
1	17.40	25.25	TC5	20	1
2	17.60	25.52	TC5	20	1
3	17.53	25.43	TC5	20	1
MN	17.51	25.40			
SD	0.10	0.13			
CV	0.58 %	0.53 %			

PEAK PROFILE



Appendix D1
Groundwater Monitoring Report
2495 NW Nicolai Street, May 2010

GROUNDWATER MONITORING REPORT

CALBAG METALS COMPANY FACILITY
2495 NW NICOLAI STREET
PORTLAND, OREGON

ECSI No. 5059

Prepared for

2495 Nicolai LLC

2495 NW Nicolai Street
Portland, Oregon

Prepared by

GeoPro LLC
PO Box 26, Battle Ground, Washington 98604
(360) 666-1465
geopro@comcast.net

May 2010

Contents

1 INTRODUCTION

1.1 Purpose

This Report is prepared for 2495 Nicolai LLC for their property located at 2495 NW Nicolai Street, Portland, Oregon (Site). This Groundwater Monitoring Report is in partial response to an Oregon Department of Environmental Quality (DEQ) Voluntary Cleanup Program (VCP) Agreement.

DEQ reviewed a Site subsurface investigation report, "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009, and provided comments in a letter dated October 28, 2009 that included the need to conduct an additional round of groundwater sampling during February or March 2010. The purpose of this groundwater monitoring report is to summarize all Site groundwater monitoring data and to evaluate the nature and extent of potential contamination in shallow groundwater. Groundwater monitoring is carried out to support a potential No Further Action (NFA) determination for the Site.

1.2 Scope of Services

This work is performed to determine whether contaminants, primarily metals, have impacted shallow groundwater beneath the Site. The following are specific objectives:

1. Conduct a second round of groundwater monitoring to include water level measurement and groundwater sampling, for three onsite monitor wells.
2. Determine shallow groundwater gradient beneath the Site for the March 2010 monitoring event.
3. Evaluate the nature and extent of contamination in shallow groundwater.

2 BACKGROUND

2.1 Site Description

The Site consists of 1.68 acres of developed land and 0.23 acres of undeveloped land located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1). The developed portion of the site is paved and contains several buildings including a corporate office building, a general storage building, an open shed with a flat metal roof, and a processing warehouse. The warehouse is a flat-roofed wood and steel-framed building with concrete exterior walls and a concrete foundation that covers 67,281 square feet. The site is accessed from the south via an entrance from NW Nicolai Street and from the west via an entrance from NW 25th Place

The Site is operated by Calbag Metals Company ("Calbag"). Calbag purchases used and scrap nonferrous metal, then cuts, sorts, and packages the metals for resale. The purchased metals include primarily aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or polychlorinated biphenyls (PCBs). Fabrication does not occur at the Site.

2.2 Physical Setting

The ground surface at the site slopes gradually to the northeast. Ground cover consists primarily of a building and asphalt parking. The Site is zoned industrial. The Site is located within Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). Quaternary alluvium deposits of river deposits of silt, sand and organic-rich clay separate the Site from the Willamette River. The geologic map depicts Holocene artificial fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill ends that were deposited to the north of the Site.

2.3 Previous Assessments

In response to a US Environmental Protection Agency (EPA) CERCLA Section 104(e) information request, Site information was summarized in "Responses to U.S. EPA CERCLA Section 104(e) Information Request", dated July 2008, and was submitted to EPA.

A soil and groundwater investigation was conducted in October-November 2008, and included drilling and sampling three soil borings and installation of three monitoring wells. An initial round of groundwater samples were collected from the monitoring wells. Results of the soil and groundwater investigation were summarized in "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009.

The findings summarized in the May 2009 report include a comparison of the groundwater sample results to the Screening Level Values (SLVs) for water from the DEQ JSCS Table 3-1. The results of sampling the groundwater from the three monitor wells indicates that chemicals are not present at elevated concentrations. Some detected practical quantitation limits (PQLs) exceeded SLVs and only chloroform, a common laboratory contaminant, was detected above SLVs.

3 INVESTIGATION ACTIVITIES

A second round of groundwater monitoring was conducted in March 2010 and included measurement of groundwater levels and sampling groundwater in three onsite monitor wells, MW-1, MW-2 and MW-3. Initial groundwater monitoring was conducted shortly after the monitor wells were installed in November 2008 and the results are report in the May 2009 site assessment report.

3.1 Groundwater Monitoring

Groundwater levels were measured in each monitoring well prior to sampling groundwater. At each well, the locking cap was removed and the conditions in the well were allowed to equilibrate to external conditions. General weather and well conditions, as well as monitoring data, were noted on monitoring logs (see Appendix B). To measure water levels, a water level probe was lowered into the well until the probe contacted the water surface in the well, signaled by a buzzer. The depth in feet to the water surface was measured from a surveyed measuring point on the rim of the well casing and the elevation of the water surface was calculated with respect to feet above sea level.

Once groundwater levels were measured, well purging and groundwater sampling in each monitor well was conducted using low-flow techniques. A pump and dedicated polyethylene tubing were lowered into the well casing and positioned toward the middle of the well screen. The low-flow pump was then turned on and the pump rate set low enough to minimize drawdown of the water level within the well during purging. The monitor wells were purged and groundwater quality parameters, including temperature, pH, and conductivity, were periodically monitored until they stabilized.

Turbidity was visually monitored and recorded, and was also used as an indication of when the groundwater was stable for sampling. After stabilization was reached, a groundwater sample was collected following the low-flow technique described above. Groundwater samples were prepared according to protocol established by the analytical laboratory. A chain of custody was prepared for all groundwater samples which were sent to the laboratory in cooled ice chests.

3.2 Chemical Analyses and Methods

Metals, petroleum hydrocarbons, and PAHs are the main chemicals of concern based on the operations of the facility. In addition, the Guilds Lake Remediation Project and other offsite properties in the vicinity of the Site previously detected hazardous substances including PCBs, petroleum hydrocarbons, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples from the Site were analyzed for at least constituents detected in the vicinity.

All groundwater samples were analyzed for petroleum hydrocarbons by NWTPH, volatile organics (VOCs) by EPA Method 8260B, PAHS by EPA Method 8270D/SIM, PCBs by EPA Method 8082, pesticides by EPA Method 8081A, total and dissolved Priority Pollutant Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by EPA Method 200.8/7470A, hexane extractable material ("HEM" – oil and grease) by EPA Method 1664, and total organic carbon (TOC). Dissolved metals were analyzed only for the initial November 2009 groundwater sampling round.

4 GROUNDWATER MONITORING RESULTS

Data quality objectives for this investigation are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in shallow groundwater above concentrations of concern. Groundwater sampling data were evaluated by comparing to appropriate screening criteria to support a potential NFA determination for the Site.

4.1 Groundwater Monitoring

Groundwater levels were measured in all wells during the round of groundwater monitoring on February 20, 2009, and again on March 22, 2010. Groundwater level measurements for both rounds of groundwater monitoring, as well as elevations and surveyed locations of the monitor wells are presented in Table 1.

Groundwater flow direction for the March 2010 monitoring event are shown on Figure 5. The shallow groundwater gradient beneath the Site is very low to flat. Based on measured water levels, shallow groundwater flows generally north-northwesterly and in the general downstream flow direction of the Willamette River. In this area of northwest Portland, shallow groundwater flow may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. Further investigation would be required to better define the groundwater flow directions and gradients with respect to the general region of the Site.

Table 1 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-1	56.010	55.841	691089.023	7637324.331	50	40/50	2/20/09	39.55	16.291
							3/22/10	41.66	14.181
MW-2	60.289	60.049	691054.877	7637663.578	49.5	39.5/49.5	2/20/09	43.69	16.359
							3/22/10	45.65	14.399
MW-3	62.943	62.567	690834.411	7637665.522	55	45/55	2/20/09	46.29	16.277
							3/22/10	48.23	14.337

Notes:
Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Wells installed October 31 – November 1, 2008.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008

4.2 Analytical Results

Results of November 2008 and March 2010 groundwater sample laboratory analyses are summarized in the following Table 2. The March 2010 laboratory report is included in Appendix A. Risk-based concentrations (RBCs) for ingestion and inhalation of tapwater and freshwater ecological screening levels (SLVs) are included in Table 2 for comparison to results of the 2008 and 2010 groundwater sampling results. Shallow groundwater beneath the Site is not currently used for consumption, since drinking water is provided by the City of Portland Water Bureau, and no plans exist for future use of shallow groundwater. Groundwater flowing from beneath the Site flows toward the Willamette River and likely discharges to the river a distance of ½ mile or more downgradient from the Site. A potential beneficial use of groundwater may be discharge to surface water.

In general, total and dissolved metals were not detected in groundwater from the three monitor wells. However, the Practical Quantitation Limit (PQL) for some metals were higher than its RBC. The PQL for arsenic exceeds its RBC. The PQLs for beryllium, cadmium, copper, selenium and silver exceed their SLVs. The March 2010 samples were not analyzed for dissolved metals. Total metals concentrations may not be representative of dissolved conditions as they may also be measuring soil particles incorporated into samples.

PCBs as arochlors were not detected, although their PQLs were higher than their respective RBCs, and the PQL for arochlor 1254 is higher than its SLV.

Organochlorine pesticides were not detected, although some pesticides had PQLs that are higher than their respective RBCs, including aldrin and dieldrin, and higher than their respective SLVs, including heptachlor epoxide, gamma chlordane, alpha chlordane, DDD and DDT. There is no known use of organochlorine pesticides onsite.

Four VOCs, including carbon tetrachloride, 1,1,1-trichloroethane, carbon disulfide, and tetrachloroethene (PCE), were detected in shallow groundwater at very low concentrations that did not exceed their DEQ RBCs or SLVs. PCE and carbon tetrachloride are not chemicals known to have been used on the Site. PCE was detected in upgradient wells MW-4 and MW-6 as previously reported. Carbon tetrachloride may be a laboratory contaminant. Chloroform was detected during the November 2008 and March 2010 sampling events at concentrations that exceed its RBC. Concentrations of chloroform detected in well MW-1 range from 1.2 to 1.3 ug/l and in MW-2 from

0.44 to 0.81 ug/l. Chloroform is not known to have been used on the Site and is a common byproduct of treatment of drinking water. All other VOCs were not detected but six VOCs had PQLs that exceeded their RBCs including 1,2 dibromoethane, 1,2 dichloroethane, bromodichloromethane, naphthalene and vinyl chloride, and chloroform in well MW-2.

PAHs were not detected in Site groundwater at concentrations exceeding DEQ RBCs or SLVs. Two PAHs had PQLs that exceed their respective RBCs including benzo(a)pyrene and dibenz(a,h)anthracene.

Petroleum hydrocarbons were not detected although the PQL for diesel exceeds its RBC. Petroleum hydrocarbon constituents would also be detected through VOC analyses.

Table 2 - Groundwater Analyses Monitor Wells

	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
CHEMICALS		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
METALS-TOTAL (EPA 200.8/7470A)										
Antimony	1600				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	0.038	0.13	0.27	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	73	150	290	<11	<11	<11	<11	<11	<11
Cadmium	2.2	18	37	73	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium	11	55,000	110,000	220,000	<11	<11	<11	<11	<11	<11
Copper	9	1500	2900	5800	<11	<11	<11	<11	<11	<11
Lead	2.5	15	15	15	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	11	22	44	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	730	1500	2900	<22	<22	<22	<22	<22	<22
Selenium	5				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12				<11	<11	<11	<11	<11	<11
Thallium	40				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120				<28	<56	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)										
Antimony	1600				<5		<5		<5	
Arsenic	150	0.038	0.13	0.27	<3		<3		<3	
Beryllium	5.3	73	150	290	<10		<10		<10	
Cadmium	2.2	18	37	73	<4		<4		<4	
Chromium	11	55,000	110,000	220,000	<10		<10		<10	
Copper	9	1500	2900	5800	<10		<10		<10	
Lead	2.5	15	15	15	<1		<1		<1	

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Mercury	0.77	11	22	44	<0.5		<0.5		<0.5	
Nickel	52	730	1500	2900	<20		<20		<20	
Selenium	5				<5		<5		<5	
Silver	0.12				<10		<10		<10	
Thallium	40				<5		<5		<5	
Zinc	120				<50		<50		<50	
PCBs AROCLORS (EPA 8082)										
Aroclor 1016		0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)										
alpha-BHC	2.2				<0.0047		<0.0047		<0.0047	
beta-BHC	2.2				<0.0047		<0.0047		<0.0047	
delta-BHC					<0.0047		<0.0047		<0.0047	
gamma-BHC (Lindane)	0.052	0.012	0.058	0.065	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	0.0029	0.014	0.016	<0.0047		<0.0047		<0.0047	
Aldrin	0.06	0.00077	0.0037	0.0041	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	0.0062	0.022	0.045	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
alpha-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	
4,4'-DDE		0.039	0.19	0.21	<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	0.24	0.82	1.7	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	0.17	0.58	1.2	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	0.00081	0.0039	0.0044	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endrin	0.036	11	22	44	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde					<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03				<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate					<0.0047		<0.0047		<0.0047	
Endrin Ketone					<0.019		<0.019		<0.019	
Toxaphene					<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)										
1,1,1,2-Tetrachloroethane	186				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	9,100	18,000	38,000	<0.2	<0.2	<0.2	<0.2	<0.2	**0.46**
1,1,2,2-Tetrachoroethane	2,200				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9,400	0.23	0.83	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	2.3	11	13	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	340	680	1,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
1,2,4-Trimethylbenzene		15	29	61	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane					<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (EDB)		0.0063	0.031	0.034	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	370	740	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane (EDC)	20,000	0.14	0.69	0.78	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5,700				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		360	730	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	0.42	2.3	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)					<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4,760				<1	<1	<1	<1	<1	<1
2-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99				<2	<2	<2	<2	<2	<2
4-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1,500				<5	<5	<5	<5	<5	<5
Benzene	130	0.39	1.7	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		0.12	0.59	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		2.7	12	16	<1	<1	<1	<1	<1	<1
Bromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92				<0.2	<0.2	<0.2	<0.2	<0.2	**0.28**
Carbon Tetrachloride	74	0.41	1.7	2.4	<0.2	<0.2	<0.2	<0.2	**0.35**	**0.31**
Chloroethane		21,000	42,000	88,000	<1	<1	<1	<1	<1	<1

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Chlorobenzene	50	91	180	380	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroform	1,240	0.19	0.98	0.99	**1.3**	**1.2**	<0.2	<0.2	**0.44**	**0.81**
Chloromethane		190	380	790	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	590	73	150	290	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	1.4	6.7	7.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene		0.0081	0.39	0.44						
Hexachlorobutadiene	9.3				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)					<1	<1	<1	<1	<1	<1
Isopropylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	200	410	850	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2,200				<1	<1	<1	<1	<1	<1
Methy t-Butyl Ether (MTBE)		12	53	67	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone					<2	<2	<2	<2	<2	<2
Naphthalene	620	0.14	0.78	0.72	<1	<1	<1	<1	<1	<1
n-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		680	1,400	2,800	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		200	410	850	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Isopropyltoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		1,600	3,200	6,700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Tetrachloroethene	840	11	49	64	**0.3**	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	9.8	2,300	4,600	9,200	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21,900	0.43	1.7	3.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane (Freon 11)		1,300	2,600	5,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16				<2	<2	<2	<2	<2	<2
Vinyl Chloride		0.025	0.059	0.52	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)										
Naphthalene	620	0.14	0.78	0.72	<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
2-Methylnaphthalene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
1-Methylnaphthalene	201				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenaphthylene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenapththene	520	2,200			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluorene	3.9	1,500			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Phenanthrene	6.3				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Anthracene	13				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluoranthene	6.16				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Pyrene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Benzo(a)anthracene	0.027	0.029	0.088	0.56	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Chrysene		0.16	0.66		<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(b)fluoranthene		0.011	0.039	0.16	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(k)fluoranthene		0.29			<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(a)pyrene	0.014	0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Ideno(1,2,3-c,d)pyrene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Dibenz(a,h)anthracene		0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(g,h,i)perylene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
PETROLEUM HYDROCARBONS										
Diesel Range (NWTPH-Dx)		100	100	430	<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)					<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		110	110	450	<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)					<5200		<5200		<5200	
Total Organic Carbon						<1000		<1000		<1000

Notes:
[1] *Freshwater aquatic Screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998.*
[2] *Risk-Based Concentrations (RBCs) for ingestion & inhalation from tapwater, "Risk-Based Decisionmaking Guidance", DEQ, 2003, Table of Risk-Based Concentrations (updated June 7, 2012). RBCs for residential (Res), Urban Residential (URes), and Occupational (Occ) exposures.*
[3] *Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.*
[4] *Date of sampling.*
Blank cell means not analyzed, or no available SLV/RBC. Detected concentration below practical quantitation limit (PQL) noted as (<) with its respective PQL value. ***Bolded*** *values are concentrations detected above the respective PQL.*
Grey shaded cells are PQLs greater than one or more respective DEQ RBC. Yellow shaded cells are detected concentrations that exceed one or more DEQ RBC.

5 FINDINGS AND CONCLUSIONS

The Site investigation, including soil and groundwater results reported in the May 2009 subsurface report, was intended to carry out a site investigation on a voluntary basis. No beneficial use has been identified for onsite groundwater, although groundwater likely discharges to the Willamette River downgradient from the site so discharge to surface water may be a potential beneficial use of the shallow groundwater. Groundwater data collected were tabulated and compared to DEQ RBCs for residential and occupational exposures.

Metals were generally not detected in groundwater at concentrations that exceed their RBCs although some of the metal RBCs were slightly higher than their SLVs. Carbon tetrachloride, 1,1,1-trichloroethane, carbon disulfide, and tetrachloroethene (PCE), were detected in shallow groundwater at very low concentrations that did not exceed their DEQ RBCs. Carbon tetrachloride and chloroform may be laboratory contaminants; chloroform may be a relic of potable water treatment.

No PCBs, PAHs or petroleum hydrocarbons were detected in shallow groundwater at concentrations that exceed DEQ RBCs.

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at concentrations that exceed DEQ risk-based concentration criteria. Because of the degree of attenuation likely to occur if these very low concentrations were to migrate offsite and discharge to the Willamette River more than ½ mile downgradient, these checmicals are not expected to present a threat to potential exposure by comingling with surface water near the river.

6 LIMITATIONS

This report has been prepared for use by the Oregon Department of Environmental Quality and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Oregon DEQ should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

GeoPro LLC does not accept liability or responsibility for use of this report by third parties, including but not limited to, detachment, partial use, separation, or reproduction without color, if used, which may depict significant information. Such use shall be at user's sole risk and GeoPro shall have no liability for such use.

Records, documentation, and personal communication have been relied upon in good faith; however, GeoPro LLC accepts no responsibility or liability for errors or omissions of work by others. Services are performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. GeoPro LLC is not responsible for references to regulatory terms, practices, numeric data, practices or conditions that may lead to other conclusions if such references are not in final form.

Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

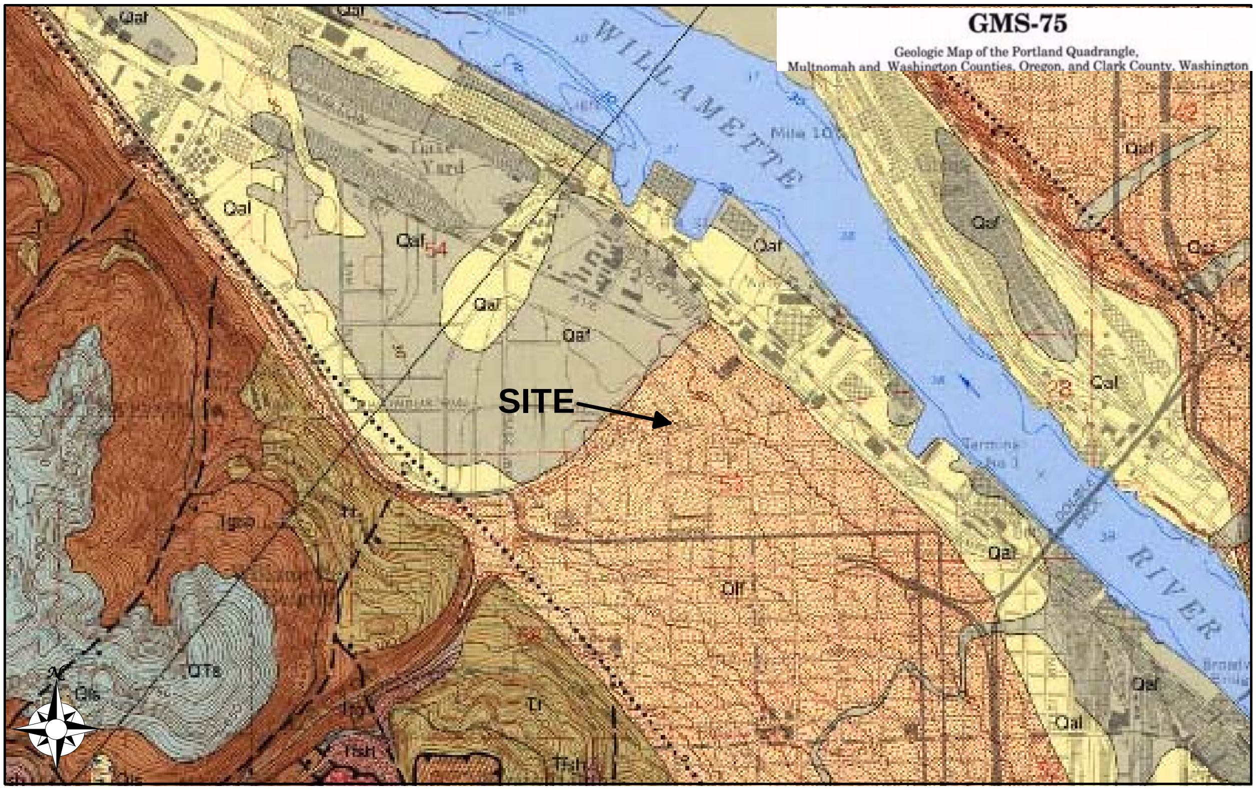
Richard C. Kent, R.G.

GeoPro LLC

Figure 1 – Location Map, Portland, Oregon

Guilds Lake Remediation Project

Figure 2 – Adjacent Properties, NW Nicolai St., Portland, Oregon



Legend

Qaf — **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal — **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff — **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 3 – Geology Map, Northwest Portland, Oregon

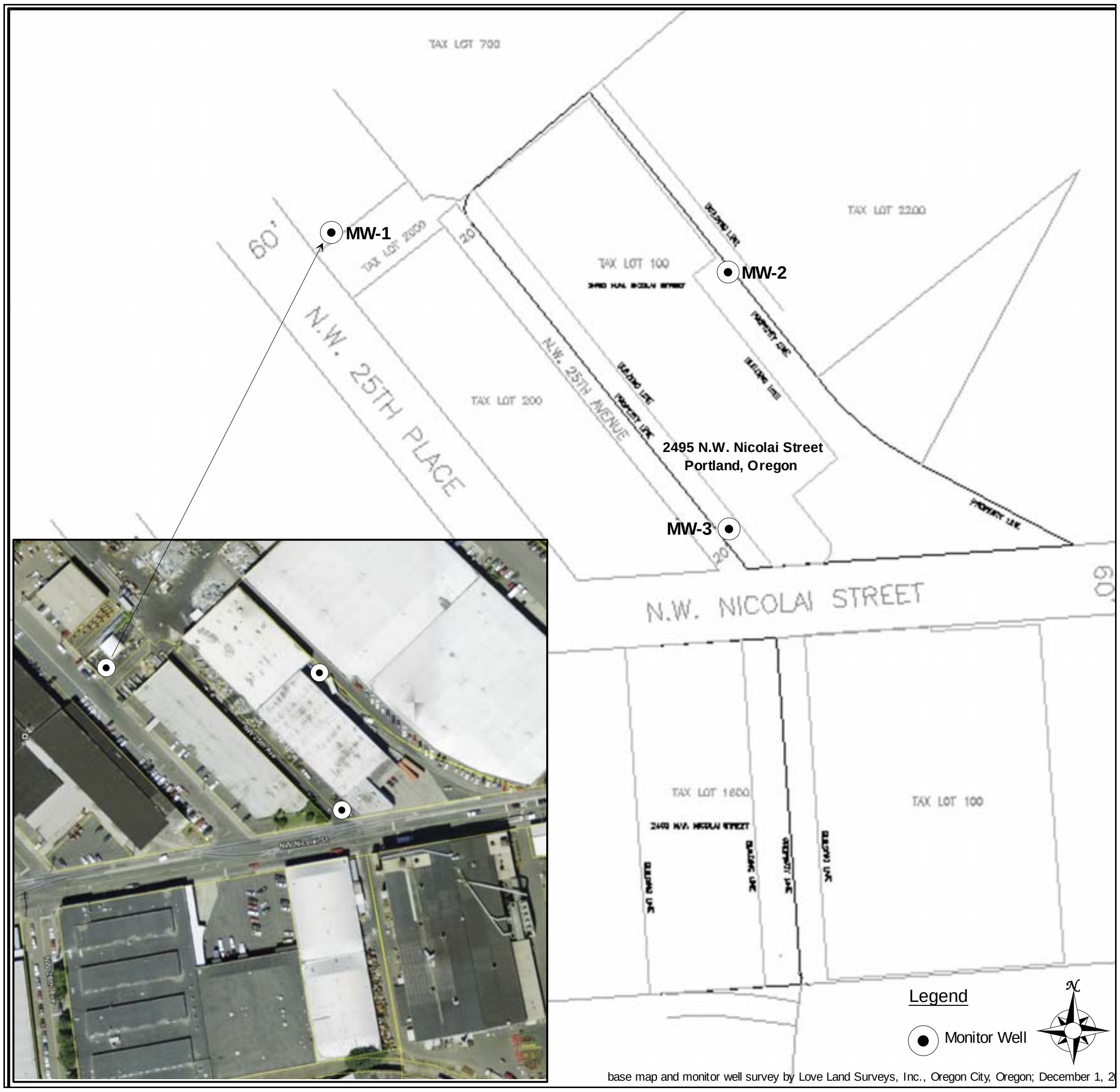


Figure 4 – Monitoring Well Locations

Figure 5 – Groundwater Flow Direction, March 2010

APPENDICES

Appendix A – Laboratory Report, March 2010

Appendix B - Groundwater Sample Logs March 2010

Appendix A
Laboratory Report

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 2, 2010

Richard Kent
GeoPro, LLC
611 NW 5th Avenue
Battle Ground, WA 98604

Re: Analytical Data for Project 100322-A
Laboratory Reference No. 1003-170

Dear Richard:

Enclosed are the analytical results and associated quality control data for samples submitted on March 24, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

Case Narrative

Samples were collected on March 22 and 23, 2010 and received by the laboratory on March 24, 2010. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*74-121*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0324W1					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-164-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*93*	*93*	*74-121*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**~~MW-4-39.5/49.55~~**					
Laboratory ID:	03-170-04					
Gasoline	**ND**	100	NWTPH-Gx	3-29-10	3-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*74-121*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0329W1					
Gasoline	**ND**	100	NWTPH-Gx	3-29-10	3-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*74-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-182-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*96*	*95*	*74-121*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-01				
Client ID:	**MW-1-40/50**				
Diesel Range	**ND**	0.25	3-30-10	3-30-10	Y
Lube Oil Range	**ND**	0.40	3-30-10	3-30-10	Y
Surrogate: o-terphenyl	95%	50-150			
Lab ID:	03-170-02				
Client ID:	**MW-2-39.5/49.5**				
Diesel Range	**ND**	0.25	3-30-10	3-30-10	Y
Lube Oil Range	**ND**	0.40	3-30-10	3-30-10	Y
Surrogate: o-terphenyl	86%	50-150			
Lab ID:	03-170-03				
Client ID:	**MW-3-45/55**				
Diesel Range	**ND**	0.25	3-30-10	3-30-10	Y
Lube Oil Range	**ND**	0.40	3-30-10	3-30-10	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-30-10
Date Analyzed:	3-30-10
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0330W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	81%
Flags:	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30-10

Matrix: Water
Units: mg/L (ppm)

Lab ID:	03-163-01	03-163-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	84%	84%
Flags:	Y	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01
Client ID: MW-1-40/50

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	1.2		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-01
Client ID: MW-1-40/50

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	3-25-10
Date Analyzed:	3-25-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	03-170-02
Client ID:	**MW-2-39.5/49.5**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-02
Client ID: MW-2-39.5/49.5

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	86	71-126
Toluene-d8	88	76-116
4-Bromofluorobenzene	85	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-03
Client ID: MW-3-45/55

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	0.28		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	0.81		0.20
1,1,1-Trichloroethane	0.46		0.20
Carbon Tetrachloride	0.31		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B

Lab ID: 03-170-03
Client ID: MW-3-45/55

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	87	71-126
Toluene-d8	88	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0325W1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0325W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0325W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	10.8	108	10.8	108	70-130	
Benzene	10.0	10.4	104	10.5	105	73-130	
Trichloroethene	10.0	10.2	102	10.0	100	79-122	
Toluene	10.0	10.5	105	10.4	104	80-121	
Chlorobenzene	10.0	9.87	99	9.66	97	83-116	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	0	15	
Benzene	1	14	
Trichloroethene	2	14	
Toluene	1	13	
Chlorobenzene	2	13	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-04
Client ID: ~~**MW-4-39.5/49.55**~~

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-04
Client ID: ~~**MW-4-39.5/49.55**~~

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	0.51		0.40
o-Xylene	0.26		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	88	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	86	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	3-26-10
Date Analyzed:	3-26-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0326W1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0326W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	71-126
Toluene-d8	88	76-116
4-Bromofluorobenzene	85	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0326W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	10.8	108	11.1	111	70-130	
Benzene	10.0	10.5	105	10.8	108	73-130	
Trichloroethene	10.0	9.92	99	9.97	100	79-122	
Toluene	10.0	10.4	104	10.6	106	80-121	
Chlorobenzene	10.0	9.74	97	9.83	98	83-116	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	3	15	
Benzene	2	14	
Trichloroethene	1	14	
Toluene	2	13	
Chlorobenzene	1	13	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Naphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*47 - 105*				
Pyrene-d10	*94*	*35 - 129*				
Terphenyl-d14	*82*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Naphthalene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*47 - 105*				
Pyrene-d10	*97*	*35 - 129*				
Terphenyl-d14	*84*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Naphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*62*	*47 - 105*				
Pyrene-d10	*82*	*35 - 129*				
Terphenyl-d14	*74*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0325W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*47 - 105*				
Pyrene-d10	*96*	*35 - 129*				
Terphenyl-d14	*84*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0325W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.367**	**0.315**	0.500	0.500	73	63	49 - 101	15	34	
Acenaphthylene	**0.381**	**0.365**	0.500	0.500	76	73	54 - 113	4	27	
Acenaphthene	**0.386**	**0.370**	0.500	0.500	77	74	55 - 101	4	24	
Fluorene	**0.398**	**0.395**	0.500	0.500	80	79	60 - 104	1	20	
Phenanthrene	**0.411**	**0.411**	0.500	0.500	82	82	61 - 99	0	16	
Anthracene	**0.416**	**0.419**	0.500	0.500	83	84	60 - 109	1	16	
Fluoranthene	**0.422**	**0.430**	0.500	0.500	84	86	66 - 111	2	16	
Pyrene	**0.426**	**0.430**	0.500	0.500	85	86	66 - 113	1	17	
Benzo[a]anthracene	**0.421**	**0.421**	0.500	0.500	84	84	56 - 111	0	17	
Chrysene	**0.436**	**0.436**	0.500	0.500	87	87	55 - 102	0	19	
Benzo[b]fluoranthene	**0.427**	**0.434**	0.500	0.500	85	87	60 - 112	2	17	
Benzo[k]fluoranthene	**0.426**	**0.431**	0.500	0.500	85	86	45 - 114	1	21	
Benzo[a]pyrene	**0.411**	**0.418**	0.500	0.500	82	84	52 - 113	2	19	
Indeno(1,2,3-c,d)pyrene	**0.373**	**0.398**	0.500	0.500	75	80	34 - 124	6	21	
Dibenz[a,h]anthracene	**0.349**	**0.386**	0.500	0.500	70	77	26 - 129	10	31	
Benzo[g,h,i]perylene	**0.372**	**0.401**	0.500	0.500	74	80	26 - 127	8	25	
Surrogate:										
2-Fluorobiphenyl					*67*	*61*	*47 - 105*			
Pyrene-d10					*80*	*81*	*35 - 129*			
Terphenyl-d14					*75*	*75*	*36 - 106*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Lab Traveler: 1003-170
Project: 100322-A

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*76*	*39-126*				
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*73*	*39-126*				
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*76*	*39-126*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Lab Traveler: 1003-170
Project: 100322-A

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0331W1					
Aroclor 1016	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*75*	*39-126*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	03-150-12										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.468**	**0.456**	0.472	0.473	ND	**99**	**96**	60-140	3	20	
Surrogate:											
DCB						*78*	*78*	*39-126*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-01					
Client ID:	**MW1-40/50**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**ND**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-02					
Client ID:	**MW-2-39.5/49.5**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**ND**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-03					
Client ID:	**MW-3-45/55**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**4.4**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-30-10
Date Analyzed:	3-30&4-1-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0330W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	56

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 7470A
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0326W1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.50

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	56	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.50	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**108**	98	**119**	108	10	
Arsenic	110	**108**	98	**121**	110	12	
Beryllium	110	**105**	95	**116**	105	10	
Cadmium	110	**107**	97	**118**	107	10	
Chromium	110	**96.7**	88	**108**	98	11	
Copper	110	**104**	94	**114**	104	10	
Lead	110	**106**	96	**118**	107	11	
Nickel	110	**106**	96	**117**	107	10	
Selenium	110	**112**	102	**126**	115	12	
Silver	110	**105**	95	**117**	107	11	
Thallium	110	**106**	96	**115**	105	8	
Zinc	110	**111**	101	**122**	110	9	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 7470A
MS/MSD QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	12.5	**12.1**	97	**11.7**	94	3	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0330W1					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Analyte	Result		PQL	RPD	Limit	Flags
DUPLICATE						
Laboratory ID:	03-170-01					
	Sample	Duplicate				
Total Organic Carbon	**ND**	**ND**	1.0	NA	20	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	Flags
SPIKE BLANK						
Laboratory ID:	SB0330W1					
Total Organic Carbon	**14.5**	12.5	ND	**116**	80-120	
MATRIX SPIKE						
Laboratory ID:	03-170-01					
Total Organic Carbon	**14.1**	12.5	ND	**106**	75-125	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 03-170

Company: GeoPro LLC
Project Number: 100322-A
Project Name: Calbag 2495 Groundwater
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days) (TPH analysis 5 working days)
☐ ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/~~BTEX~~	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8) PP	TCLP Metals DIS PP	HEM by 1664	TOC						% Moisture
1	MW-1-40/50	3/22/10	1118	W	16		X	X	X			X	X	~~X~~		X	~~X~~	~~X~~	X						
2	MW-2-39.5/49.5	3/22/10	1256	W	16		X	X	X			X	X	~~X~~		X	~~X~~	~~X~~	X						
3	MW-3-45/55	3/22/10	1015	W	16		X	X	X			X	X	~~X~~		X	~~X~~	~~X~~	X						
~~4~~	~~MW-4-39.5/49.55~~	~~3/23/10~~	~~1315~~	~~W~~	~~3~~		X		X					NO DB			NO. DB	NO. DB							

	Signature	Company	Date	Time
Relinquished by	[signature]	GeoPro LLC	3/23/10	1630
Received by	[signature]	OSE	3/24/10	1000
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
3 coolers
X Added 3/25/10 . DB

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

Appendix B
Groundwater Sample Field Logs

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GROUNDWATER SAMPLE FIELD LOG

DAY/DATE: Monday, March 22, 2010	SHEET 1 of 1
PROJECT NAME: Calbag 2495 Groundwater	PROJECT NO.: 100322-A
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: ☐Fair ☒Overcast ☐Fog ☐Rain ☐Snow Temp.: ☐<0 ☐0-32 ☐33-54 ☒55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☒50-74 ☐>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☒S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☐Moderate ☐Heavy

WELL NO. (or Boring, Location): MW-1		**SAMPLE NUMBER: MW-1-40/50**
Well depth: 50 ft	Screen length: 10 ft	Laboratory: OnSite, Redmond, WA
Well install date: 11/1/08		COC and/or RFA Number:
Pre-purge SWL: 41.66		Casing diameter: 2 inch
Time Sample Collected:		SWL at sample time: 41.66
Sample Turbidity: 110 TDS		Sample Conductance: 220µ
Sample Color: clear		Sample pH: 7.17
Sample Temperature: 56.1 F		Sample Odor: none

Field Data pump depth: 46 ft bgs

Time (24 HR)	Temp	Cond	pH	Pump Rate or Bail No.	Turbidity	Other
1108	56.2	246	6.27		126	
1112	55.7	240	7.33		117	
1116	56.1	220	7.17		110	

Sample Collection Method:

The monitor well was purged:

☒ of stagnant water in the casing and filter by slowly setting a pump or intake tubing within the approximate middle of the screened interval or slightly above the middle until the until the temperature, conductivity and pH stabilized. OR,

☐ of stagnant water in the casing and filter by slowly setting a pump or intake tubing at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized. OR,

☐ by hand bailing until temperature, conductivity and pH stabilized.

Samples were collected:

☒by setting a pump, or tubing attached to a pump, within the approximate middle of the screened interval until the temperature, conductivity and pH stabilized.

☐ by setting a pump, or tubing attached to a pump, at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized.

☐ with disposable bailers until the temperature, conductivity and pH stabilized.

Sample Shipment:

Water samples were placed in appropriate containers suitable for analyses requested. As necessary, the containers were prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest at approximately 4°C (e.g. blu-ice) for transport to the laboratory.

Analysis Requested: (per laboratory protocols)

☐ NWTPH-HCID; ☒ NWTPH-Gx; ☒NWTPH-Dx; ☐ NWTPH-Gx/BTEX; ☒VOC; ☐ HVOC;

☐ SemiVOC; ☒PAH; ☒PCB; ☒Pesticides; ☒8, ☐10, ☐13) Metals; ☐ TCLP; ☐ MTBE;

☒OTHER: DIS Metals, HEM, TOC

SIGNATURE: Patrick Kent

PRINT NAME: Patrick Kent

Notes: 2-inch, Schedule 40 PVC casing = 0.163 gallons per foot; 6" Hole = 1.469 gallons per foot

GeoPro Geologic Services LLC
Post Office Box 26
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GROUNDWATER SAMPLE FIELD LOG

DAY/DATE: Monday, March 22, 2010	SHEET 1 of 1
PROJECT NAME: Calbag 2495 Groundwater	PROJECT NO.: 100322-A
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: ☐Fair ☒Overcast ☐Fog ☐Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☒26-49 ☐50-74 ☐>75	Wind: ☐Calm ☒Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☒W ☐NW Precip.: ☒None ☐Mist ☐Light ☐Moderate ☐Heavy

WELL NO. (or Boring, Location): MW-2	**SAMPLE NUMBER: MW-2-39.5/49.5**
Well depth: 49.5 ft / Screen length: 10 ft	Laboratory: OnSite, Redmond, WA
Well install date: 10/31/08	COC and/or RFA Number:
Pre-purge SWL: 45.65	Casing diameter: 2 inch
Time Sample Collected: 1256	SWL at sample time: 45.6
Sample Turbidity: 213	Sample Conductance: 423
Sample Color: clear	Sample pH: 8.14
Sample Temperature: 58.4 F	Sample Odor: none

Field Data

Time (24 HR)	Temp	Cond	pH	Pump Rate or Bail No.	Turbidity	Other
1245	60.7	430	6.80	<1.5 gpm	204	clear
1250	59.4	427	8.48	<1.5 gpm	205	clear
1255	58.4	423	8.14	<1.5 gpm	213	clear

Sample Collection Method:

The monitor well was purged:

☒ of stagnant water in the casing and filter by slowly setting a pump or intake tubing within the approximate middle of the screened interval or slightly above the middle until the until the temperature, conductivity and pH stabilized. OR,

☐ of stagnant water in the casing and filter by slowly setting a pump or intake tubing at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized. OR,

☐ by hand bailing until temperature, conductivity and pH stabilized.

Samples were collected:

☒by setting a pump, or tubing attached to a pump, within the approximate middle of the screened interval until the temperature, conductivity and pH stabilized.

☐ by setting a pump, or tubing attached to a pump, at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized.

☐ with disposable bailers until the temperature, conductivity and pH stabilized.

Sample Shipment:

Water samples were placed in appropriate containers suitable for analyses requested. As necessary, the containers were prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest at approximately 4°C (e.g. blu-ice) for transport to the laboratory.

Analysis Requested: (per laboratory protocols)

☐ NWTPH-HCID; ☒ NWTPH-Gx; ☒NWTPH-Dx; ☐ NWTPH-Gx/BTEX; ☒VOC; ☐ HVOC;

☐ SemiVOC; ☒PAH; ☒PCB; ☒Pesticides; ☒8, ☐10, ☐13) Metals; ☐ TCLP; ☐ MTBE;

☒OTHER: DIS Metals, HEM, TOC

SIGNATURE: Richard C. Kent

PRINT NAME: Richard Kent

Notes: 2-inch, Schedule 40 PVC casing = 0.163 gallons per foot; 6" Hole = 1.469 gallons per foot

GeoPro Geologic Services LLC
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GROUNDWATER SAMPLE FIELD LOG

DAY/DATE: Monday, March 22, 2010	SHEET 1 of 1
PROJECT NAME: Calbag 2495 Groundwater	PROJECT NO.: 100322-A
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: ☐Fair ☒Overcast ☐Fog ☐Rain ☐Snow Temp.: ☐<0 ☐0-32 ☐33-54 ☒55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☒50-74 ☐>75	Wind: ☐Calm ☒Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☒S ☐SW ☐W ☐NW Precip.: ☒None ☐Mist ☐Light ☐Moderate ☐Heavy

WELL NO. (or Boring, Location): MW-3	**SAMPLE NUMBER: MW-3-45/55**
Well depth: 55 ft / Screen length: 10 ft	Laboratory: OnSite, Redmond, WA
Well install date: 11/1/08	COC and/or RFA Number:
Pre-purge SWL: 48.23 ft	Casing diameter: 2 inch
Time Sample Collected: 1015	SWL at sample time: 48.2
Sample Turbidity: 249 ppm	Sample Conductance: 490
Sample Color: clear	Sample pH: 5.56
Sample Temperature: 56.3 F	Sample Odor: none

Field Data

Time (24 HR)	Temp	Cond	pH	Pump Rate or Bail No.	Turbidity	Other
1002	56.2	928	4.11		clear	
1007	56.5	588	5.07		313 ppm	
1012	56.3	490	5.56		249 ppm	

Sample Collection Method:

The monitor well was purged:

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☐ of stagnant water in the casing and filter by slowly setting a pump or intake tubing at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized. OR,

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Water samples were placed in appropriate containers suitable for analyses requested. As necessary, the containers were prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest at approximately 4°C (e.g. blu-ice) for transport to the laboratory.

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☐ NWTPH-HCID; ☒ NWTPH-Gx; ☒NWTPH-Dx; ☐ NWTPH-Gx/BTEX; ☒VOC; ☐ HVOC;

☐ SemiVOC; ☒PAH; ☒PCB; ☒Pesticides; ☒8, ☐10, ☐13) Metals; ☐ TCLP; ☐ MTBE;

☒OTHER: DIS Metals, HEM, TOC

SIGNATURE: ________________

PRINT NAME: _Patrick Kent_______________________________

Notes: 2-inch, Schedule 40 PVC casing = 0.163 gallons per foot; 6” Hole = 1.469 gallons per foot

Appendix E

Stormwater Catch Basins Sediment Sampling Report

2495 NW Nicolai Street, May 2009

STORMWATER CATCH BASINS SEDIMENT SAMPLING REPORT

CALBAG FACILITY
2495 NW NICOLAI STREET
PORTLAND, OREGON

Prepared for

CALBAG METALS COMPANY
P.O. BOX 10067
PORTLAND, OREGON 97210

Prepared by

Blue Mountain Environmental Consulting, Inc.
1500 Adair Drive
Richland, Washington 99352

with

GeoPro Geologic Services LLC
P.O. Box 26
Battle Ground, Washington 98604

May 2009

Contents

Figures

Tables

1 INTRODUCTION

1.1 Purpose

This stormwater catch basin sampling report is submitted pursuant to a voluntary work plan approved by the State of Oregon Department of Environmental Quality ("DEQ") for property located at 2495 NW Nicolai Street, Portland, Oregon ("Site") which is operated by Calbag Metals Company ("Calbag").

The purpose of the stormwater catch basin assessment is to determine whether contaminants in sediments are entering the stormwater system and to help determine the analytical suite for stormwater contaminants of concern. If contaminants are found to be in elevated concentrations, attempts will be made to identify potential sources and implement source control measures as necessary to ensure stormwater discharges from the Site do not pose an unacceptable risk through transport of hazardous substances to the Willamette River.

1.2 Objectives

The following are specific objectives of the investigation:

1. Collect one discrete sediment sample each from six catch basins ("CB-1" through "CB-6").
2. Analyze each sediment sample for metals, PCBs, pesticides, semivolatiles, phthalates, dry weights, PAHs, and TOC.
3. Screen the analytical results against Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) found in a Microsoft Excel spreadsheet in Appendix D of the DEQ document ""Data Summary and Screening Table, Appendix D, Guidance for Evaluating the Stormwater Pathway at Upland Sites, January 2009".

2 BACKGROUND

2.1 Site Description

The Site is located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1) which includes a building housing corporate offices, storage and a processing warehouse. The building covers 67,281 square feet and consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof. The Site also contains an open shed with a metal roof.

The Site is operated by Calbag, a nonferrous scrap metal company which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals essentially include aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or PCBs. Fabrication does not occur at the Site.

The primary outdoor activity is unloading and loading of trucks and customer vehicles. The vast bulk of metals are stored indoors. Outdoor storage is generally limited to full and empty hoppers, empty steel boxes, some baled metals, and trucks. All outdoor areas are paved.

The back lot is swept with a power sweeper daily if weather conditions permit. Loading docks are swept manually every day. Catch basins are regularly inspected and cleaned quarterly. CleanWay catch basin filters are used. Catch basin locations are shown in Figure 2.

A NPDES Storm Water Discharge Permit (#1200-Z) issued by DEQ is current through June 30, 2012. The back lot eventually drains to the City of Portland's Outfall #16 and the front lot drains to Outfall #15, which is diverted to the City's Wastewater Treatment Plant via a large pipeline.

2.2 Physical Setting

The Site consists of 1.68 acres developed with the industrial building, and 0.23 acres of undeveloped land. The ground surface at the site is essentially flat. Ground cover consists primarily of a building, asphalt parking, and a paved driving and staging area north of the building. The Site can be accessed from the south via entrances from N.W. Nicolai St., and from the west via an entrance from N.W. 25th Place. The site is zoned industrial.

2.3 Adjacent Property Use

Adjacent properties are shown in Figure 3.

Madden Fabrication, located northwest and adjacent to the Northwest Ancillary Site, is a metals fabrication facility which provides custom ornamental steel work combining an element of rolling, laser cutting and casting work. The facility also works with carbon steel, stainless steel, aluminum, nickel alloys, and also has the capability to work with many exotic metals.

Rose City Textiles, located west and adjacent to the Site, is a fabric warehouse in which fabric is sized, cut and delivered.

Empty warehouses occupy the property east and adjacent to the Site. An office, occupied by Color Technology is attached to the southeastern portion of the warehouses.

Warehouses and a parking lot cover the area north of the Site and is part of the Guilds Lake Remediation Project. This property was the location of the Guilds Lake incinerator and landfill and is owned and managed by the City of Portland. The area has been remediated of previous known hazardous substances including petroleum, chromium, lead, arsenic and cadmium. DEQ approved a no further remediation action in 1998, although long term methane and groundwater monitoring is ongoing.

3 FIELD ACTIVITIES

3.1 Sediment Sampling

Visual observations were made of potential sources of contamination within the area surrounding each catch basin. The physical dimensions of each catch basin were recorded. Sampling events were documented on Sediment Sample Field Logs (see Appendix B) including such notations as color, odor, texture of each sample, depth of sediments, and debris in sediments. Photos are included on the Sediment Sample Field Logs.

Samples were collected using a stainless steel trowel. The presence of water, visible water flow, signs of flooding, clogging, debris, blocked inlets or outlets and staining and sheen were recorded. All sampling equipment was decontaminated before and after sampling activities. New latex or equivalent disposable gloves were worn during sampling. The thickness of solids and the total depth of the catch basins were measured using a decontaminated metal rod or disposable wooden dowel to probe the total depth of each catch basin. The depth and volume of water removed, if any, was recorded. Sample containers were furnished by the analytical laboratory with necessary preservatives.

3.2 Chemical Analyses and Methods

Metals are the main chemicals of concern based on the operations of the facility. The following is a list of Chemicals Of Interest ("COI") which were analyzed.

Analyte	Method Protocol
Metals	EPA 6020/7471A
PCB Aroclors (individual and total)	EPA 8082
Organochlorine pesticides	EPA 8081A
Semivolatile organics	EPA 8270C
PAHs and Phthalates	EPA 8270C-SIM
Total Organic Carbon	Plumb 1981

In addition, if volume allowed, grain size analysis per Method PSEP 1986 was performed.

4 DATA RESULTS

4.1 Analytical Results

Analytical data resulting from sample analyses are summarized below in Table 1 and in a separate document based on a DEQ digital spreadsheet using Microsoft Office 2007 Excel. The separate document is titled "Appendix D: Catch Basin Reporting and Screening Table", based on the DEQ "Guidance for Evaluating the Stormwater Pathway at Upland Sites"(DEQ File 08-LQ-076). The laboratory report is included in Appendix A.

Detected concentrations were compared to DEQ's Joint Source Control Strategy (JSCS) Screening Level Values to determine whether chemicals of potential concern are present in sediment at concentrations that pose a threat to potential receptors. Chemicals of potential concern are those present at concentrations that exceed the SLVs. The detected concentrations are compared to Screening Level Values ("SLVs") from DEQ's JSCS Table 3-1, which are highlighted in various colors in Table 1.

Table 1 – Catch Basin Sediment Sample Analyses

CHEMICALS DETECTED IN CATCH BASIN SEDIMENT – CALBAG METALS CO.							
CHEMICAL	**DEQ JSCS CRITERIA[1]**	**CB-1[2]**	**CB-2**	**CB-3**	**CB-4**	**CB-5**	**CB-6**
Polychlorinated Biphenyls- Method 8082 (ug/kg dry)							
Aroclor 1016	530	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1221	na	<2310	<5530	<2880	<8660	<2190	<2880
Aroclor 1232	na	<1150	<2750	<1430	<4310	<1450	<1430
Aroclor 1242	na	2320	933	969	<861	11700	747
Aroclor 1248	1500	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1254	300	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1260	200	<1150	<2750	<3080	<4310	<2170	<1430
Semivolatile Organic Compounds – Method 8270C (mg/kg)							
Acenaphthene	0.3	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Acenaphthylene	0.2	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Anthracene	0.845	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(a)anthracene	1.05	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(a)pyrene	1.45	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(b)fluoranthene	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(ghi)perylene	0.3	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzo(k)fluoranthene	13	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Benzoic Acid	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Benzyl alcohol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Bromophenyl phenyl ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Butyl benzyl phthalate	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Chloro-3-Methylphenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Chloroaniline	na	<59.8	<59.1	<59.9	<59.8	<59.4	<59.1
Bis(2-chloroethoxy)methane	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Bis(2-chloroethyl)ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Bis(2-chloroisopropyl)ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Chloronaphthalene	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Chlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Chlorophenyl phenyl ether	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Chrysene	1.29	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Di-n-butyl phthalate	0.1/0.06	<29.9	<29.6	<30	<29.9	<29.7	<29.6

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
Di-n-octyl phthalate	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Dibenzo(a,h)anthracene	1.3	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Dibenzofuran	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
1,2-Dichlorobenzene	1.7	<29.9	<29.6	<30	<29.9	<29.7	<29.6
1,3-Dichlorobenzene	0.3	<29.9	<29.6	<30	<29.9	<29.7	<29.6
1,4-Dichlorobenzene	0.3	<29.9	<29.6	<30	<29.9	<29.7	<29.6
3,3'-Dichlorobenzidine	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
2,4-Dichlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Diethyl phthalate	0.6	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2,4-Dimethylphenol	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Dimethyl phthalate	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4,6-Dinitro-2-methylphenol	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
2,4-Dinitrophenol	na	<59.8	<59.1	<59	<59.8	<15.4	<59.1
2,4-Dinitrotoluene	na	<15	<14.8	<15	<15	<14.9	<14.8
2,6-Dinitrotoluene	na	<15	<14.8	<15	<15	<14.9	<14.8
Bis(2-ethylhexyl)phthalate	0.8/0.33	551	38	34.9	23.4	570	65.8
Fluoranthene	2.23/37	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Fluorene	0.536	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Hexachlorobenzene	0.1/0.019	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Hexachlorobutadiene	0.6	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Hexachlorocyclopentadiene	0.4	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Hexachloroethane	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Indeno(1,2,3-cd)pyrene	0.1	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Isophorone	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Methylnaphthalene	0.2	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Methylphenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
3-,4-Methylphenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Naphthalene	0.561	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Nitroaniline	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
3-Nitroaniline	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
4-Nitroaniline	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Nitrobenzene	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2-Nitrophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
4-Nitrophenol	na	<29.9	<29.6	<30	<29.9	<29.7	<29.6
N-Nitrosodi-n-propylamine	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
N-Nitrosodiphenylamine	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Pentachlorophenol	1/0.025	<29.9	<29.6	<30	<29.9	<29.7	<29.6
Phenanthrene	1.17	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Phenol	0.05	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Pyrene	1.52/1.9	<9.87	<9.75	<9.89	<9.87	10	<9.75
1,2,4-Trichlorobenzene	9.2	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2,4,5-Trichlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
2,4,6-Trichlorophenol	na	<9.87	<9.75	<9.89	<9.87	<9.81	<9.75
Polynuclear Aromatic Compounds – Method 8270M-SIM (ug/kg dry)							
2-Methylnaphthalene	0.2	1010	<692	<1550	<866	<1450	<716
Acenaphthene	0.3	2190	<692	<1550	<866	<1450	<716
Acenaphthylene	0.2	<576	<692	<1550	<866	<1450	<716
Anthracene	0.845	1550	1260	<1550	<866	<1450	<716
Benzo(a)anthracene	1.05	4840	3690	6770	5010	6950	1450
Benzo(a)pyrene	1.45	2620	2220	3080	2200	3980	801
Benzo(b)fluoranthene	na	7530	6930	12400	9030	8420	2260
Benzo(ghi)perylene	0.3	3170	2680	4940	3260	4160	1220
Benzo(k)fluoranthene	13	4520	4040	5810	4770	4740	1240
Chrysene	1.29	13400	11600	20600	14800	17100	4250
Dibenzo(a,h)anthracene	1.3	863	747	<1550	914	<1450	<716
Fluoranthene	2.23/37	18200	16900	21300	17000	20400	5080
Fluorene	0.536	1010	<692	<1550	<866	<1450	<716
Ideno(1,2,3-cd)pyrene	0.1	2620	2290	3730	2530	3290	890
Naphthalene	0.561	2540	<692	<1550	<866	<1450	<716
Phenanthrene	1.17	7500	5850	6110	3250	9290	1700
Pyrene	1.52/1.9	12900	10100	16000	12000	20800	3620
Organochlorine Pesticides – Method 8081A (ug/kg dry)							
Aldrin	0.04	<11.6	<13.8	<15.5	<25.9	<43.6	<21.4
alpha-BHC	na	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
beta-BHC	na	<17.2	<13.8	<23.1	<17.3	<145	<14.4
delta-BHC	na	<17.2	<13.8	<23.1	<17.3	<21.7	<14.4
gamma-BHC (Lindance)	0.00499	<11.6	<13.8	<15.5	<17.3	<29.1	<14.4
gamma-Chlordane	na	<11.6	<13.8	<15.5	<17.3	<21.7	<14.4

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
alpha-Chlordane	na	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
Chlordane (tech)	0.0176/ 0.00037	<259	<310	<347	<388	<325	<322
4,4'-DDD	0.028/ 0.00033	<17.2	<27.7	<15.5	<25.9	<43.6	<14.4
4,4'-DDE	0.0313/ 0.00033	<17.2	<20.6	<15.5	<17.3	<21.7	<14.4
4,4'-DDT	0.0629/ 0.00033	<46.2	<41.5	<23.1	<25.9	<43.6	<28.7
Dieldrin	0.0618/ $8.1x10^{-6}$	<34.7	<13.8	<15.5	<17.3	<43.6	<14.4
Endosulfan I	na	<29	<13.8	<15.5	<17.3	<14.5	<14.4
Endosulfan II	na	<11.6	<20.6	<15.5	<17.3	<14.5	<14.4
Endosulfan sulfate	na	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
Endrin	0.207	<11.6	<13.8	<15.5	<17.3	<14.5	<14.4
Endrin aldehyde	na	<40.5	<27.7	<15.5	<34.7	<58.1	<21.4
Endrin ketone	na	<23.1	<41.5	<15.5	<25.9	<58.1	<21.4
Heptachlor	0.01	<17.2	<13.8	<15.5	<17.3	<145	<14.4
Heptachlor epoxide	0.016	<11.6	<13.8	<15.5	<17.3	<21.7	<14.4
Methoxychlor	na	<34.7	<69.1	<38.9	<52	<14.5	<43.1
Toxaphene	na	<345	<413	<463	<517	<434	<429
Total Metals – Method6000/7000 Series (Mercury – Method 7471A) (mg/kg dry)							
Antimony	64	20.8	17.6	7.72	9.04	471	15
Arsenic	33/7[3]	8.47	<10.2	8.9	17.1	<104	8.02
Cadmium	4.98/1	18.6	7.22	3.34	4.38	21.2	6.52
Chromium	111	1320	545	694	238	802	838
Copper	149	4820	3780	1620	1910	80500	10300
Lead	128/17	867	1090	618	553	2880	3320
Manganese	1100	891	510	464	301	797	1010
Mercury	1.06/0.07	0.359	0.241	0.493	0.522	1.71	1.52
Nickel	48.6	900	500	364	182	419	847
Selenium	5/2	<0.838	<1.02	<1.11	<1.3	1.4	<1.05
Silver	5	16.8	8.39	3.1	2.91	23.7	16.6
Zinc	459	2310	1010	561	840	37500	4260

CHEMICAL	DEQ JSCS CRITERIA[1]	CB-1[2]	CB-2	CB-3	CB-4	CB-5	CB-6
Phthalates – Method 8270-SIM (ug/kg dry)							
Dimethyl phthalate	na	<2300	<2750	<6190	<3460	<5810	<2860
Diethyl phthalate	0.6	<2300	<2750	<6190	<3460	<5810	<2860
Di-n-butyl phthalate	0.1/0.06	4520	4050	<6190	<3460	10500	7360
Butyl benzyl phthalate	na	<115000	8560	6550	3550	<290000	8500
Bis(2-ethylhexyl)phthalate	0.8/0.33	189000	209000	288000	161000	2230000	87500
Di-n-octyl phthalate	na	<15000	26400	<61900	7930	617000	8340
Other Parameters							
Solids –NCA SOP (% by weight)	na	57.9	48.4	43.2	38.6	46	46.6
TOC – Method 9060 (mg/kg)	na	71000	87000	110000	61000	140000	120000

Notes:
[1] Screening Criteria for sediment from DEQ Portland Harbor Joint Source Control Strategy (December 2005), Table 3-1
[2] Catch basins sampled are shown on the site map of Figure 2
[3] 33/7 denotes chemicals with both toxicity and bioaccumulation screening level values and analytical results are screened against both values
Cells shaded green contaminant concentration exceeds JSCS SLV
Cells shaded blue contaminant concentration exceeds JSCS SLV and bioaccumulation criteria
Cells shaded orange contaminant concentration exceeds bioaccumulation criteria but not JSCS SLV
Cells shaded gray detection limit for contaminant exceeds screening criteria

5 FINDINGS AND CONCLUSIONS

The investigation was intended to carry out an upland source control evaluation on a voluntary basis. Data collected were tabulated and compared to DEQ's JSCS SLVs as tabulated in the DEQ document "Data Summary and Screening Table, Appendix D, Guidance for Evaluating the Stormwater Pathway at Upland Sites, January 2009"). On the table, DEQ has identified SLVs that are preferred for use in screening catch basin sediment for initial upland source control evaluations.

The DEQ identified SLVs are a combination of federal minimum contaminant levels (MCLs) appropriately used for drinking water supplies, EPA tap water preliminary remediation goals (PRGs) used for evaluating the residential drinking water pathway, various ambient water quality criteria for ecological receptors, and ecological-based sediment quality and bioaccumulative criteria. As such, these DEQ-preferred screening SLVs are very conservative and not necessarily applicable to each site and its specific conditions.

Some chemicals were not detected in catch basin sediment samples, but their MDLs exceed their SLVs. For metals, nickel and zinc exceeded their SLVs in all catch basin samples while silver exceeded the SLV in CB-1, CB-2, CB-5 and CB-6 samples. Antimony exceeded the SLV only in the sample from CB-5. Chromium, copper and lead exceeded their SLVs and bioaccumulation criteria in all samples, while cadmium exceeded the SLVs in all except only the bioaccumulation criteria in samples CB-3 and CB-4. Mercury exceeded SLVs in CB-5 and CB-6 and exceeded bioaccumulation criteria in samples CB-1, CB-2, CB-3 and CB-4 but not SLVs. Manganese and selenium did not exceed SLVs in any samples. In general, there is no apparent pattern to the sample analyses that would likely identify an area of the Site that is contributing more metals to specific catch basins, or group of catch basins. This is not unexpected considering that, throughout the Site, operations are to accept scrap metals for cutting, sorting, and packaging for resale.

PCBs, except aroclor 1242, were not detected. The detection limits for all PCBs, except aroclor 1248 in CB-1, CB-5 and CB-6, exceeded screening criteria. Aroclor 1221, 1232 and 1242 do not have screening criteria. Aroclor 1242 was detected in all samples except CB-4 with the highest detections in CB-5. The analysis of aroclor 1242 in catch basin samples is within a detection range of approximately 7 percent. There is no apparent pattern based on the analyses that would identify a likely source of PCBs.

With two exceptions, all semivolatile organic compounds ("SVOCs") were non-detectable and either exceeded screening criteria, or there are no screening criteria. Bis(2-ethylhexyl)phthalate ("DEHP") was detected above screening and bioaccumulation criteria in all samples, and pyrene was detected in CB-5. DEHP is generally associated with plastics and hydraulic fluids, but can be found in many other products. It has a low solubility in water. The detection of DEHP may be related to plastic coatings on various recycled metal products like wire, but the exact source is not known.

Most polynuclear aromatic compounds ("PAHs"), typical components of asphalts, fuels, oils, and greases, were detected in catch basin samples above SLVs. In general, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, and naphthalene were not detected except in CB-1, a catch basin located in the northern back lot of the Site. Fluoranthene and pyrene were detected in all samples above SLVs and bioaccumulation criteria. The detection of PAHs is possibly due to the asphalt layering of the Site and general vehicular traffic.

Organochlorine pesticides were not detected in any samples, or the detection limit exceeded the screening criteria in several samples. Such chemicals are not used at the Site and therefore the non-detection of pesticides is expected.

Di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected in all samples at concentrations that exceed the JSCS SLVs. Such phthalates are widespread and can be found in such products as adhesives and glues, building materials, personal care products, medical devices, detergents, packaging, waxes, paints, printing inks and coatings, pharmaceuticals, food products and textiles. The potential sources of phthalates at the Site are not identifiable and unknown. Such chemicals are not used at the Site.

In general, the investigation and evaluation of analytical results indicates that chemicals are not detectable and JSCS SLVs are not achievable detections except some metals, PAHs and two phthaltes. The detected PAHs and phthaltes can be attributable to general Site operations, such as, vehicular traffic. A NPDES treatment system is operational for effluent in the north back lot for catch basins CB-1 and CB-2. Higher metal concentrations in catch basin sediments are expected due to shavings and metal debris in the catch basins because of the metal recycling operations at the Site.

6 RECOMMENDATIONS

It is recommended that catch basins CB-3 and CB-4 be outfitted with filters. It is recommended that if a decision is made to sample sediment from the catch basins in the future, consideration should be given to evaluating the results using less conservative screening values that could be more meaningful toward understanding potential adverse effects, if any, on stormwater pathways and control measures. In addition, it would not be cost effective to again analyze for a wide range of chemicals considering that this evaluation objective has shown most are non-detectable.

7 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk. Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of previous work. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing.

Richard C. Kent, R.G.
GeoPro Geologic Services LLC

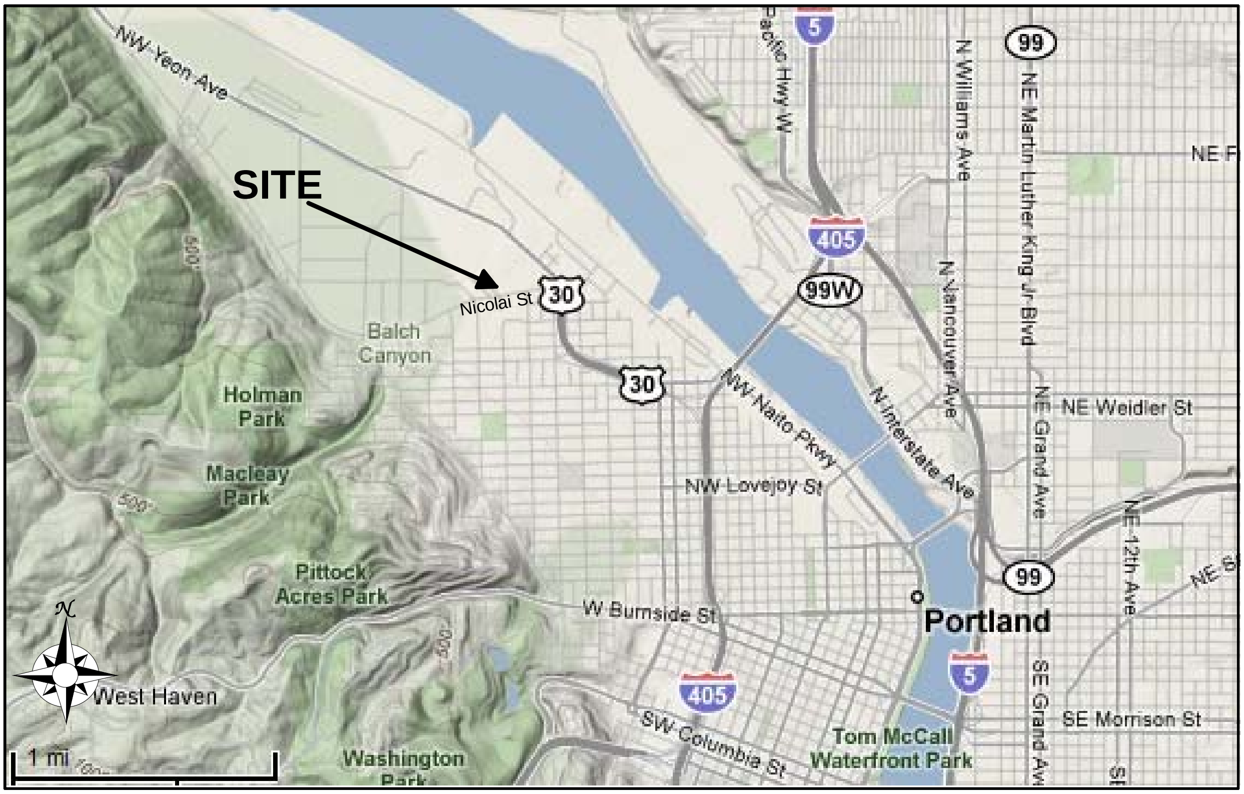

Figure 1 – Location Map, Portland, Oregon

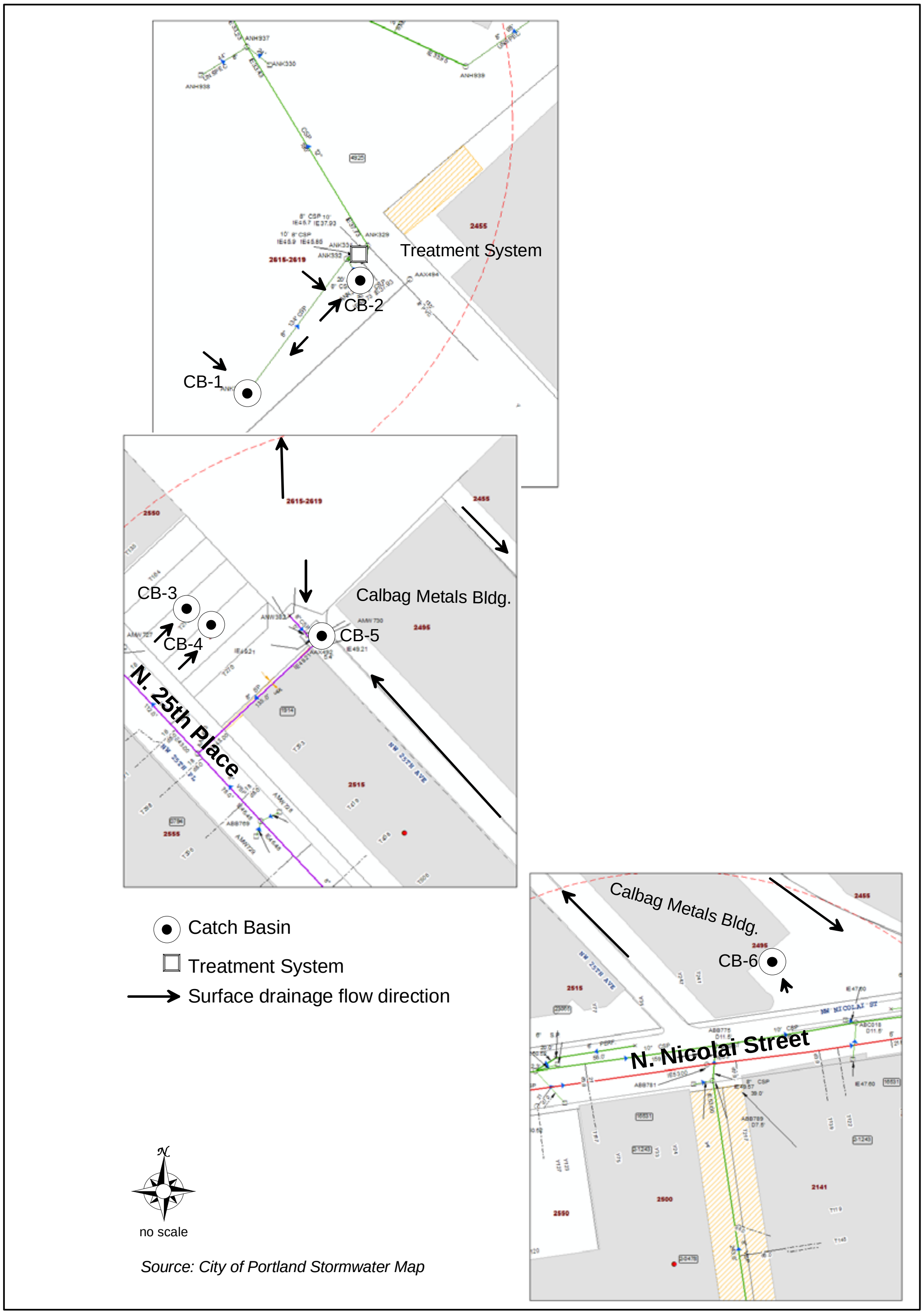

Figure 2 – Catch Basins Location Map

Guilds Lake Remediation Project

Figure 3 – Adjacent Properties, NW Nicolai St., Portland, Oregon

8 APPENDICES

Appendix A – Laboratory Analyses

Appendix B – Sediment Sample Field Logs

Appendix C – DEQ Appendix D Excel Spreadsheet Printout

APPENDIX A
Laboratory Analyses

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

May 01, 2009

Richard Kent
GeoPro Geologic Services
P.O. Box 26
Battle Ground, WA 98604

RE: Calbag Metals Stormwater Drains

Enclosed are the results of analyses for samples received by the laboratory on 04/10/09 13:45.
The following list is a summary of the Work Orders contained in this report, generated on 05/01/09 14:55.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PSD0394	Calbag Metals Stormwater Dra	080820-09-1

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CB-5-4-09	PSD0394-01	Soil	04/10/09 08:55	04/10/09 13:45
CB-1-4-09	PSD0394-02	Soil	04/10/09 09:40	04/10/09 13:45
CB-2-4-09	PSD0394-03	Soil	04/10/09 10:15	04/10/09 13:45
CB-4-4-09	PSD0394-04	Soil	04/10/09 10:55	04/10/09 13:45
CB-3-4-09	PSD0394-05	Soil	04/10/09 12:15	04/10/09 13:45
CB-6-4-09	PSD0394-06	Soil	04/10/09 12:50	04/10/09 13:45

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Analytical Case Narrative
TestAmerica - Portland, OR

PSD0394

The Method Blank for Phthalates by 8270 had a very low level contamination of Bis (2-ethylhexyl) phthalate. The amount detected was below the reporting limit, but above the method detection limit. Some of the samples contained high levels of this analyte. There are "B" and "B1" qualifiers on this analyte.

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Metals per EPA 6000/7000 Series Methods

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			Soil			Sampled: 04/10/09 08:55				
Antimony	EPA 6020	**471**	-----	104	mg/kg dry	100x	9040574	04/15/09 11:44	04/16/09 19:49	
Arsenic	"	ND	-----	104	"	"	"	"	"	
Cadmium	"	**21.2**	-----	1.04	"	1x	"	"	04/16/09 02:22	
Chromium	"	**802**	-----	104	"	100x	"	"	04/16/09 19:49	
Copper	"	**80500**	-----	414	"	"	"	"	"	
Lead	"	**2880**	-----	104	"	"	"	"	"	
Manganese	"	**797**	-----	2.07	"	1x	"	"	04/16/09 02:22	
Nickel	"	**419**	-----	207	"	100x	"	"	04/16/09 23:02	
Selenium	"	**1.40**	-----	1.04	"	1x	"	"	04/16/09 02:22	
Silver	"	**23.7**	-----	1.04	"	"	"	"	"	
Zinc	"	**37500**	-----	414	"	100x	"	"	04/16/09 19:49	
PSD0394-02 (CB-1-4-09)			Soil			Sampled: 04/10/09 09:40				
Antimony	EPA 6020	**20.8**	-----	8.38	mg/kg dry	10x	9040574	04/15/09 11:44	04/16/09 20:38	
Arsenic	"	**8.47**	-----	8.38	"	"	"	"	"	
Cadmium	"	**18.6**	-----	0.838	"	1x	"	"	04/16/09 03:09	
Chromium	"	**1320**	-----	8.38	"	10x	"	"	04/16/09 20:38	
Copper	"	**4820**	-----	33.5	"	"	"	"	"	
Lead	"	**867**	-----	8.38	"	"	"	"	"	
Manganese	"	**891**	-----	16.8	"	"	"	"	"	
Nickel	"	**900**	-----	16.8	"	"	"	"	04/16/09 23:34	
Selenium	"	ND	-----	0.838	"	1x	"	"	04/16/09 03:09	
Silver	"	**16.8**	-----	0.838	"	"	"	"	"	
Zinc	"	**2310**	-----	33.5	"	10x	"	"	04/16/09 20:38	
PSD0394-03 (CB-2-4-09)			Soil			Sampled: 04/10/09 10:15				
Antimony	EPA 6020	**17.6**	-----	10.2	mg/kg dry	10x	9040574	04/15/09 11:44	04/16/09 20:46	
Arsenic	"	ND	-----	10.2	"	"	"	"	"	
Cadmium	"	**7.22**	-----	1.02	"	1x	"	"	04/16/09 03:17	
Chromium	"	**545**	-----	1.02	"	"	"	"	"	
Copper	"	**3780**	-----	40.9	"	10x	"	"	04/16/09 20:46	
Lead	"	**1090**	-----	10.2	"	"	"	"	"	
Manganese	"	**510**	-----	2.05	"	1x	"	"	04/16/09 03:17	
Nickel	"	**500**	-----	2.05	"	"	"	"	"	
Selenium	"	ND	-----	1.02	"	"	"	"	"	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Metals per EPA 6000/7000 Series Methods

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				
Silver	EPA 6020	**8.39**	-----	1.02	mg/kg dry	1x	9040574	04/15/09 11:44	04/16/09 03:17	
Zinc	"	**1010**	-----	4.09	"	"	"	"	"	
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				
Antimony	EPA 6020	**9.04**	-----	2.59	mg/kg dry	2x	9040574	04/15/09 11:44	04/16/09 20:54	
Arsenic	"	**17.1**	-----	2.59	"	"	"	"	"	
Cadmium	"	**4.38**	-----	1.30	"	1x	"	"	04/16/09 03:25	
Chromium	"	**238**	-----	1.30	"	"	"	"	"	
Copper	"	**1910**	-----	10.4	"	2x	"	"	04/16/09 20:54	
Lead	"	**553**	-----	1.30	"	1x	"	"	04/16/09 03:25	
Manganese	"	**301**	-----	2.59	"	"	"	"	"	
Nickel	"	**182**	-----	2.59	"	"	"	"	"	
Selenium	"	ND	-----	1.30	"	"	"	"	"	
Silver	"	**2.91**	-----	1.30	"	"	"	"	"	
Zinc	"	**840**	-----	5.18	"	"	"	"	"	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				
Antimony	EPA 6020	**7.72**	-----	2.23	mg/kg dry	2x	9040574	04/15/09 11:44	04/16/09 21:02	
Arsenic	"	**8.90**	-----	2.23	"	"	"	"	"	
Cadmium	"	**3.34**	-----	1.11	"	1x	"	"	04/16/09 03:33	
Chromium	"	**694**	-----	1.11	"	"	"	"	"	
Copper	"	**1620**	-----	8.90	"	2x	"	"	04/16/09 21:02	
Lead	"	**618**	-----	1.11	"	1x	"	"	04/16/09 03:33	
Manganese	"	**464**	-----	2.23	"	"	"	"	"	
Nickel	"	**364**	-----	2.23	"	"	"	"	"	
Selenium	"	ND	-----	1.11	"	"	"	"	"	
Silver	"	**3.10**	-----	1.11	"	"	"	"	"	
Zinc	"	**561**	-----	4.45	"	"	"	"	"	
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				
Antimony	EPA 6020	**15.0**	-----	2.10	mg/kg dry	2x	9040574	04/15/09 11:44	04/16/09 21:10	
Arsenic	"	**8.02**	-----	2.10	"	"	"	"	"	
Cadmium	"	**6.52**	-----	1.05	"	1x	"	"	04/16/09 03:41	
Chromium	"	**838**	-----	1.05	"	"	"	"	"	
Copper	"	**10300**	-----	84.2	"	20x	"	"	04/16/09 23:42	
Lead	"	**3320**	-----	21.0	"	"	"	"	"	

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Estella K Rieben

Estella Rieben, Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Metals per EPA 6000/7000 Series Methods

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				
Manganese	"	**1010**	-----	2.10	"	1x	"	"	04/16/09 03:41	
Nickel	"	**847**	-----	2.10	"	"	"	"	"	
Selenium	"	ND	-----	1.05	"	"	"	"	"	
Silver	"	**16.6**	-----	1.05	"	"	"	"	"	
Zinc	"	**4260**	-----	84.2	"	20x	"	"	04/16/09 23:42	

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Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Mercury per EPA Method 7471A

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				
Mercury	EPA 7471A	**1.71**	-----	0.163	mg/kg dry	1x	9040532	04/14/09 14:43	04/14/09 16:46	
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				
Mercury	EPA 7471A	**0.359**	-----	0.167	mg/kg dry	1x	9040532	04/14/09 14:43	04/14/09 16:51	
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				
Mercury	EPA 7471A	**0.241**	-----	0.190	mg/kg dry	1x	9040532	04/14/09 14:43	04/14/09 16:54	
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				
Mercury	EPA 7471A	**0.522**	-----	0.142	mg/kg dry	1x	9040532	04/14/09 14:43	04/14/09 16:56	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				
Mercury	EPA 7471A	**0.493**	-----	0.188	mg/kg dry	1x	9040532	04/14/09 14:43	04/14/09 16:59	
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				
Mercury	EPA 7471A	**1.52**	-----	0.192	mg/kg dry	1x	9040532	04/14/09 14:43	04/14/09 17:02	

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organochlorine Pesticides per EPA Method 8081A

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				**RL3**
Aldrin	EPA 8081A	ND	-----	43.6	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 00:49	**RL1**
alpha-BHC	"	ND	-----	14.5	"	"	"	"	"	
beta-BHC	"	ND	-----	145	"	"	"	"	"	**RL1**
delta-BHC	"	ND	-----	21.7	"	"	"	"	"	**RL1**
gamma-BHC (Lindane)	"	ND	-----	29.1	"	"	"	"	"	**RL1**
gamma-Chlordane	"	ND	-----	21.7	"	"	"	"	"	**RL1**
alpha-Chlordane	"	ND	-----	14.5	"	"	"	"	"	
Chlordane (tech)	"	ND	-----	325	"	"	"	"	"	
4,4´-DDD	"	ND	-----	43.6	"	"	"	"	"	**RL1**
4,4´-DDE	"	ND	-----	21.7	"	"	"	"	"	**RL1**
4,4´-DDT	"	ND	-----	43.6	"	"	"	"	"	**RL1**
Dieldrin	"	ND	-----	43.6	"	"	"	"	"	**RL1**
Endosulfan I	"	ND	-----	14.5	"	"	"	"	"	
Endosulfan II	"	ND	-----	14.5	"	"	"	"	"	
Endosulfan sulfate	"	ND	-----	14.5	"	"	"	"	"	
Endrin	"	ND	-----	14.5	"	"	"	"	"	
Endrin aldehyde	"	ND	-----	58.1	"	"	"	"	"	**RL1**
Endrin ketone	"	ND	-----	58.1	"	"	"	"	"	**RL1**
Heptachlor	"	ND	-----	145	"	"	"	"	"	**RL1**
Heptachlor epoxide	"	ND	-----	21.7	"	"	"	"	"	**RL1**
Methoxychlor	"	ND	-----	14.5	"	"	"	"	"	
Toxaphene	"	ND	-----	434	"	"	"	"	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene				*211%*		*36 - 140 %*	*"*		*"*	***ZX***
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL3**
Aldrin	EPA 8081A	ND	-----	11.6	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 01:15	
alpha-BHC	"	ND	-----	11.6	"	"	"	"	"	
beta-BHC	"	ND	-----	17.2	"	"	"	"	"	**RL1**
delta-BHC	"	ND	-----	17.2	"	"	"	"	"	**RL1**
gamma-BHC (Lindane)	"	ND	-----	11.6	"	"	"	"	"	
gamma-Chlordane	"	ND	-----	11.6	"	"	"	"	"	
alpha-Chlordane	"	ND	-----	11.6	"	"	"	"	"	
Chlordane (tech)	"	ND	-----	259	"	"	"	"	"	
4,4´-DDD	"	ND	-----	17.2	"	"	"	"	"	**RL1**
4,4´-DDE	"	ND	-----	17.2	"	"	"	"	"	**RL1**
4,4´-DDT	"	ND	-----	46.2	"	"	"	"	"	**RL1**

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organochlorine Pesticides per EPA Method 8081A

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL3**
Dieldrin	EPA 8081A	ND	-----	34.7	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 01:15	RL1
Endosulfan I	"	ND	-----	29.0	"	"	"	"	"	RL1
Endosulfan II	"	ND	-----	11.6	"	"	"	"	"	
Endosulfan sulfate	"	ND	-----	11.6	"	"	"	"	"	
Endrin	"	ND	-----	11.6	"	"	"	"	"	
Endrin aldehyde	"	ND	-----	40.5	"	"	"	"	"	RL1
Endrin ketone	"	ND	-----	23.1	"	"	"	"	"	RL1
Heptachlor	"	ND	-----	17.2	"	"	"	"	"	RL1
Heptachlor epoxide	"	ND	-----	11.6	"	"	"	"	"	
Methoxychlor	"	ND	-----	34.7	"	"	"	"	"	RL1
Toxaphene	"	ND	-----	345	"	"	"	"	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene				*114%*		*36 - 140 %*	*"*		*"*	
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				**RL3**
Aldrin	EPA 8081A	ND	-----	13.8	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 01:41	
alpha-BHC	"	ND	-----	13.8	"	"	"	"	"	
beta-BHC	"	ND	-----	13.8	"	"	"	"	"	
delta-BHC	"	ND	-----	13.8	"	"	"	"	"	
gamma-BHC (Lindane)	"	ND	-----	13.8	"	"	"	"	"	
gamma-Chlordane	"	ND	-----	13.8	"	"	"	"	"	
alpha-Chlordane	"	ND	-----	13.8	"	"	"	"	"	
Chlordane (tech)	"	ND	-----	310	"	"	"	"	"	
4,4´-DDD	"	ND	-----	27.7	"	"	"	"	"	RL1
4,4´-DDE	"	ND	-----	20.6	"	"	"	"	"	RL1
4,4´-DDT	"	ND	-----	41.5	"	"	"	"	"	RL1
Dieldrin	"	ND	-----	13.8	"	"	"	"	"	
Endosulfan I	"	ND	-----	13.8	"	"	"	"	"	
Endosulfan II	"	ND	-----	20.6	"	"	"	"	"	RL1
Endosulfan sulfate	"	ND	-----	13.8	"	"	"	"	"	
Endrin	"	ND	-----	13.8	"	"	"	"	"	
Endrin aldehyde	"	ND	-----	27.7	"	"	"	"	"	RL1
Endrin ketone	"	ND	-----	41.5	"	"	"	"	"	RL1
Heptachlor	"	ND	-----	13.8	"	"	"	"	"	
Heptachlor epoxide	"	ND	-----	13.8	"	"	"	"	"	
Methoxychlor	"	ND	-----	69.1	"	"	"	"	"	RL1
Toxaphene	"	ND	-----	413	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organochlorine Pesticides per EPA Method 8081A

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				**RL3**
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene				*109%*		*36 - 140 %*	*10x*		*04/21/09 01:41*	
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				**RL3**
Aldrin	EPA 8081A	ND	-----	25.9	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 02:07	**RL1**
alpha-BHC	"	ND	-----	17.3	"	"	"	"	"	
beta-BHC	"	ND	-----	17.3	"	"	"	"	"	
delta-BHC	"	ND	-----	17.3	"	"	"	"	"	
gamma-BHC (Lindane)	"	ND	-----	17.3	"	"	"	"	"	
gamma-Chlordane	"	ND	-----	17.3	"	"	"	"	"	
alpha-Chlordane	"	ND	-----	17.3	"	"	"	"	"	
Chlordane (tech)	"	ND	-----	388	"	"	"	"	"	
4,4´-DDD	"	ND	-----	25.9	"	"	"	"	"	**RL1**
4,4´-DDE	"	ND	-----	17.3	"	"	"	"	"	
4,4´-DDT	"	ND	-----	25.9	"	"	"	"	"	**RL1**
Dieldrin	"	ND	-----	17.3	"	"	"	"	"	
Endosulfan I	"	ND	-----	17.3	"	"	"	"	"	
Endosulfan II	"	ND	-----	17.3	"	"	"	"	"	
Endosulfan sulfate	"	ND	-----	17.3	"	"	"	"	"	
Endrin	"	ND	-----	17.3	"	"	"	"	"	
Endrin aldehyde	"	ND	-----	34.7	"	"	"	"	"	**RL1**
Endrin ketone	"	ND	-----	25.9	"	"	"	"	"	**RL1**
Heptachlor	"	ND	-----	17.3	"	"	"	"	"	
Heptachlor epoxide	"	ND	-----	17.3	"	"	"	"	"	
Methoxychlor	"	ND	-----	52.0	"	"	"	"	"	**RL1**
Toxaphene	"	ND	-----	517	"	"	"	"	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene				*75.8%*		*36 - 140 %*	*"*		*"*	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				**RL3**
Aldrin	EPA 8081A	ND	-----	15.5	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 16:04	
alpha-BHC	"	ND	-----	15.5	"	"	"	"	"	
beta-BHC	"	ND	-----	23.1	"	"	"	"	"	**RL1**
delta-BHC	"	ND	-----	23.1	"	"	"	"	"	**RL1**
gamma-BHC (Lindane)	"	ND	-----	15.5	"	"	"	"	"	
gamma-Chlordane	"	ND	-----	15.5	"	"	"	"	"	
alpha-Chlordane	"	ND	-----	15.5	"	"	"	"	"	
Chlordane (tech)	"	ND	-----	347	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organochlorine Pesticides per EPA Method 8081A

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				**RL3**
4,4´-DDD	EPA 8081A	ND	-----	15.5	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 16:04	
4,4´-DDE	"	ND	-----	15.5	"	"	"	"	"	
4,4´-DDT	"	ND	-----	23.1	"	"	"	"	"	RL1
Dieldrin	"	ND	-----	15.5	"	"	"	"	"	
Endosulfan I	"	ND	-----	15.5	"	"	"	"	"	
Endosulfan II	"	ND	-----	15.5	"	"	"	"	"	
Endosulfan sulfate	"	ND	-----	15.5	"	"	"	"	"	
Endrin	"	ND	-----	15.5	"	"	"	"	"	
Endrin aldehyde	"	ND	-----	15.5	"	"	"	"	"	
Endrin ketone	"	ND	-----	15.5	"	"	"	"	"	
Heptachlor	"	ND	-----	15.5	"	"	"	"	"	
Heptachlor epoxide	"	ND	-----	15.5	"	"	"	"	"	
Methoxychlor	"	ND	-----	38.9	"	"	"	"	"	RL1
Toxaphene	"	ND	-----	463	"	"	"	"	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene				*104%*		*36 - 140 %*	*"*			*"*
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				**RL3**
Aldrin	EPA 8081A	ND	-----	21.4	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 02:33	RL1
alpha-BHC	"	ND	-----	14.4	"	"	"	"	"	
beta-BHC	"	ND	-----	14.4	"	"	"	"	"	
delta-BHC	"	ND	-----	14.4	"	"	"	"	"	
gamma-BHC (Lindane)	"	ND	-----	14.4	"	"	"	"	"	
gamma-Chlordane	"	ND	-----	14.4	"	"	"	"	"	
alpha-Chlordane	"	ND	-----	14.4	"	"	"	"	"	
Chlordane (tech)	"	ND	-----	322	"	"	"	"	"	
4,4´-DDD	"	ND	-----	14.4	"	"	"	"	"	
4,4´-DDE	"	ND	-----	14.4	"	"	"	"	"	
4,4´-DDT	"	ND	-----	28.7	"	"	"	"	"	RL1
Dieldrin	"	ND	-----	14.4	"	"	"	"	"	
Endosulfan I	"	ND	-----	14.4	"	"	"	"	"	
Endosulfan II	"	ND	-----	14.4	"	"	"	"	"	
Endosulfan sulfate	"	ND	-----	14.4	"	"	"	"	"	
Endrin	"	ND	-----	14.4	"	"	"	"	"	
Endrin aldehyde	"	ND	-----	21.4	"	"	"	"	"	RL1
Endrin ketone	"	ND	-----	21.4	"	"	"	"	"	RL1
Heptachlor	"	ND	-----	14.4	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organochlorine Pesticides per EPA Method 8081A

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				**RL3**
Heptachlor epoxide	EPA 8081A	ND	-----	14.4	ug/kg dry	10x	9040554	04/15/09 15:45	04/21/09 02:33	
Methoxychlor	"	ND	-----	43.1	"	"	"	"	"	**RL1**
Toxaphene	"	ND	-----	429	"	"	"	"	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene				*131%*		*36 - 140 %*	*"*			*"*

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Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	1450	ug/kg dry	100x	9040556	04/15/09 15:00	04/23/09 16:52	
Aroclor 1221	"	ND	-----	2910	"	"	"	"	"	
Aroclor 1232	"	ND	-----	1450	"	"	"	"	"	
Aroclor 1242	"	**11700**	-----	1450	"	"	"	"	"	
Aroclor 1248	"	ND	-----	1450	"	"	"	"	"	
Aroclor 1254	"	ND	-----	1450	"	"	"	"	"	
Aroclor 1260	"	ND	-----	2170	"	"	"	"	"	**RL1**
Surrogate(s): Decachlorobiphenyl				*722%*		*16 - 149 %*	*"*		*"*	***Z3***
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	1150	ug/kg dry	100x	9040556	04/15/09 15:00	04/23/09 17:55	
Aroclor 1221	"	ND	-----	2310	"	"	"	"	"	
Aroclor 1232	"	ND	-----	1150	"	"	"	"	"	
Aroclor 1242	"	**2320**	-----	1150	"	"	"	"	"	
Aroclor 1248	"	ND	-----	1150	"	"	"	"	"	
Aroclor 1254	"	ND	-----	1150	"	"	"	"	"	
Aroclor 1260	"	ND	-----	1150	"	"	"	"	"	**RL1**
Surrogate(s): Decachlorobiphenyl				*322%*		*16 - 149 %*	*"*		*"*	***Z3***
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	2750	ug/kg dry	40x	9040556	04/15/09 15:00	04/29/09 22:26	**RL1**
Aroclor 1221	"	ND	-----	5530	"	"	"	"	"	**RL1**
Aroclor 1232	"	ND	-----	2750	"	"	"	"	"	**RL1**
Aroclor 1242	"	**933**	-----	550	"	"	"	"	"	
Aroclor 1248	"	ND	-----	2750	"	"	"	"	"	**RL1**
Aroclor 1254	"	ND	-----	2750	"	"	"	"	"	**RL1**
Aroclor 1260	"	ND	-----	2750	"	"	"	"	"	**RL1**
Surrogate(s): Decachlorobiphenyl				*743%*		*16 - 149 %*	*"*		*"*	***ZX***
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	4310	ug/kg dry	50x	9040556	04/15/09 15:00	04/29/09 22:56	**RL1**
Aroclor 1221	"	ND	-----	8660	"	"	"	"	"	**RL1**
Aroclor 1232	"	ND	-----	4310	"	"	"	"	"	**RL1**
Aroclor 1242	"	ND	-----	861	"	"	"	"	"	
Aroclor 1248	"	ND	-----	4310	"	"	"	"	"	**RL1**

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-04 (CB-4-4-09)		**Soil**				**Sampled: 04/10/09 10:55**				**RL3**
Aroclor 1254	EPA 8082	ND	-----	4310	ug/kg dry	50x	9040556	04/15/09 15:00	04/29/09 22:56	**RL1**
Aroclor 1260	"	ND	-----	4310	"	"	"	"	"	**RL1**
Surrogate(s): Decachlorobiphenyl				*1080%*		*16 - 149 %*	*"*		*"*	***ZX***
PSD0394-05 (CB-3-4-09)		**Soil**				**Sampled: 04/10/09 12:15**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	3080	ug/kg dry	40x	9040556	04/15/09 15:00	04/29/09 23:27	**RL1**
Aroclor 1221	"	ND	-----	6190	"	"	"	"	"	**RL1**
Aroclor 1232	"	ND	-----	3080	"	"	"	"	"	**RL1**
Aroclor 1242	"	**969**	-----	615	"	"	"	"	"	
Aroclor 1248	"	ND	-----	3080	"	"	"	"	"	**RL1**
Aroclor 1254	"	ND	-----	3080	"	"	"	"	"	**RL1**
Aroclor 1260	"	ND	-----	3080	"	"	"	"	"	**RL1**
Surrogate(s): Decachlorobiphenyl				*1370%*		*16 - 149 %*	*"*		*"*	***ZX***
PSD0394-06 (CB-6-4-09)		**Soil**				**Sampled: 04/10/09 12:50**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	1430	ug/kg dry	20x	9040556	04/15/09 15:00	04/29/09 23:58	**RL1**
Aroclor 1221	"	ND	-----	2880	"	"	"	"	"	**RL1**
Aroclor 1232	"	ND	-----	1430	"	"	"	"	"	**RL1**
Aroclor 1242	"	**747**	-----	286	"	"	"	"	"	
Aroclor 1248	"	ND	-----	1430	"	"	"	"	"	**RL1**
Aroclor 1254	"	ND	-----	1430	"	"	"	"	"	**RL1**
Aroclor 1260	"	ND	-----	1430	"	"	"	"	"	**RL1**
Surrogate(s): Decachlorobiphenyl				*62.6%*		*16 - 149 %*	*"*		*"*	***Z3***

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

PSD0394-01 (CB-5-4-09) — **Soil** — **Sampled: 04/10/09 08:55** — RL3

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Acenaphthene	EPA 8270C	ND	-----	9.81	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 02:49	
Acenaphthylene	"	ND	-----	9.81	"	"	"	"	"	
Anthracene	"	ND	-----	9.81	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	9.81	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	9.81	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	9.81	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	9.81	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	9.81	"	"	"	"	"	
Benzoic Acid	"	ND	-----	29.7	"	"	"	"	"	
Benzyl alcohol	"	ND	-----	9.81	"	"	"	"	"	
4-Bromophenyl phenyl ether	"	ND	-----	9.81	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	9.81	"	"	"	"	"	
4-Chloro-3-methylphenol	"	ND	-----	9.81	"	"	"	"	"	
4-Chloroaniline	"	ND	-----	59.4	"	"	"	"	"	
Bis(2-chloroethoxy)methane	"	ND	-----	9.81	"	"	"	"	"	
Bis(2-chloroethyl)ether	"	ND	-----	9.81	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	"	ND	-----	9.81	"	"	"	"	"	
2-Chloronaphthalene	"	ND	-----	9.81	"	"	"	"	"	
2-Chlorophenol	"	ND	-----	9.81	"	"	"	"	"	
4-Chlorophenyl phenyl ether	"	ND	-----	9.81	"	"	"	"	"	
Chrysene	"	ND	-----	9.81	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	29.7	"	"	"	"	"	
Di-n-octyl phthalate	"	**23.1**	-----	9.81	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	9.81	"	"	"	"	"	
Dibenzofuran	"	ND	-----	9.81	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	29.7	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	29.7	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	29.7	"	"	"	"	"	
3,3´-Dichlorobenzidine	"	ND	-----	29.7	"	"	"	"	"	
2,4-Dichlorophenol	"	ND	-----	9.81	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	9.81	"	"	"	"	"	
2,4-Dimethylphenol	"	ND	-----	29.7	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	9.81	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	"	ND	-----	29.7	"	"	"	"	"	
2,4-Dinitrophenol	"	ND	-----	59.4	"	"	"	"	"	
2,4-Dinitrotoluene	"	ND	-----	14.9	"	"	"	"	"	

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Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			Soil			Sampled: 04/10/09 08:55				RL3
2,6-Dinitrotoluene	EPA 8270C	ND	-----	14.9	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 02:49	
Bis(2-ethylhexyl)phthalate	"	**570**	-----	149	"	20x	"	"	04/23/09 00:03	
Fluoranthene	"	ND	-----	9.81	"	3x	"	"	04/18/09 02:49	
Fluorene	"	ND	-----	9.81	"	"	"	"	"	
Hexachlorobenzene	"	ND	-----	9.81	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	29.7	"	"	"	"	"	
Hexachlorocyclopentadiene	"	ND	-----	29.7	"	"	"	"	"	
Hexachloroethane	"	ND	-----	29.7	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	9.81	"	"	"	"	"	
Isophorone	"	ND	-----	9.81	"	"	"	"	"	
2-Methylnaphthalene	"	ND	-----	9.81	"	"	"	"	"	
2-Methylphenol	"	ND	-----	9.81	"	"	"	"	"	
3-,4-Methylphenol	"	ND	-----	9.81	"	"	"	"	"	
Naphthalene	"	ND	-----	9.81	"	"	"	"	"	
2-Nitroaniline	"	ND	-----	9.81	"	"	"	"	"	
3-Nitroaniline	"	ND	-----	29.7	"	"	"	"	"	
4-Nitroaniline	"	ND	-----	9.81	"	"	"	"	"	
Nitrobenzene	"	ND	-----	9.81	"	"	"	"	"	
2-Nitrophenol	"	ND	-----	9.81	"	"	"	"	"	
4-Nitrophenol	"	ND	-----	29.7	"	"	"	"	"	
N-Nitrosodi-n-propylamine	"	ND	-----	9.81	"	"	"	"	"	
N-Nitrosodiphenylamine	"	ND	-----	9.81	"	"	"	"	"	
Pentachlorophenol	"	ND	-----	29.7	"	"	"	"	"	
Phenanthrene	"	ND	-----	9.81	"	"	"	"	"	
Phenol	"	ND	-----	9.81	"	"	"	"	"	
Pyrene	"	**10.0**	-----	9.81	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	9.81	"	"	"	"	"	
2,4,5-Trichlorophenol	"	ND	-----	9.81	"	"	"	"	"	
2,4,6-Trichlorophenol	"	ND	-----	9.81	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
2-Fluorophenol				*NR*		*10 - 150 %*	*"*		*"*	***Z3***
Nitrobenzene-d5				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
Phenol-d6				*NR*		*10 - 150 %*	*"*		*"*	***Z3***
p-Terphenyl-d14				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
2,4,6-Tribromophenol				*NR*		*10 - 150 %*	*"*		*"*	***Z3***

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Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				RL3
Acenaphthene	EPA 8270C	ND	-----	9.87	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 03:33	
Acenaphthylene	"	ND	-----	9.87	"	"	"	"	"	
Anthracene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	9.87	"	"	"	"	"	
Benzoic Acid	"	ND	-----	29.9	"	"	"	"	"	
Benzyl alcohol	"	ND	-----	9.87	"	"	"	"	"	
4-Bromophenyl phenyl ether	"	ND	-----	9.87	"	"	"	"	"	
Butyl benzyl phthalate	"	**29.5**	-----	9.87	"	"	"	"	"	
4-Chloro-3-methylphenol	"	ND	-----	9.87	"	"	"	"	"	
4-Chloroaniline	"	ND	-----	59.8	"	"	"	"	"	
Bis(2-chloroethoxy)methane	"	ND	-----	9.87	"	"	"	"	"	
Bis(2-chloroethyl)ether	"	ND	-----	9.87	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	"	ND	-----	9.87	"	"	"	"	"	
2-Chloronaphthalene	"	ND	-----	9.87	"	"	"	"	"	
2-Chlorophenol	"	ND	-----	9.87	"	"	"	"	"	
4-Chlorophenyl phenyl ether	"	ND	-----	9.87	"	"	"	"	"	
Chrysene	"	ND	-----	9.87	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	29.9	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	9.87	"	"	"	"	"	
Dibenzofuran	"	ND	-----	9.87	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	29.9	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	29.9	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	29.9	"	"	"	"	"	
3,3´-Dichlorobenzidine	"	ND	-----	29.9	"	"	"	"	"	
2,4-Dichlorophenol	"	ND	-----	9.87	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
2,4-Dimethylphenol	"	ND	-----	29.9	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	"	ND	-----	29.9	"	"	"	"	"	
2,4-Dinitrophenol	"	ND	-----	59.8	"	"	"	"	"	
2,4-Dinitrotoluene	"	ND	-----	15.0	"	"	"	"	"	

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Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL3**
2,6-Dinitrotoluene	EPA 8270C	ND	-----	15.0	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 03:33	
Bis(2-ethylhexyl)phthalate	"	**551**	-----	150	"	20x	"	"	04/23/09 00:47	
Fluoranthene	"	ND	-----	9.87	"	3x	"	"	04/18/09 03:33	
Fluorene	"	ND	-----	9.87	"	"	"	"	"	
Hexachlorobenzene	"	ND	-----	9.87	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	29.9	"	"	"	"	"	
Hexachlorocyclopentadiene	"	ND	-----	29.9	"	"	"	"	"	
Hexachloroethane	"	ND	-----	29.9	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	9.87	"	"	"	"	"	
Isophorone	"	ND	-----	9.87	"	"	"	"	"	
2-Methylnaphthalene	"	ND	-----	9.87	"	"	"	"	"	
2-Methylphenol	"	ND	-----	9.87	"	"	"	"	"	
3-,4-Methylphenol	"	ND	-----	9.87	"	"	"	"	"	
Naphthalene	"	ND	-----	9.87	"	"	"	"	"	
2-Nitroaniline	"	ND	-----	9.87	"	"	"	"	"	
3-Nitroaniline	"	ND	-----	29.9	"	"	"	"	"	
4-Nitroaniline	"	ND	-----	9.87	"	"	"	"	"	
Nitrobenzene	"	ND	-----	9.87	"	"	"	"	"	
2-Nitrophenol	"	ND	-----	9.87	"	"	"	"	"	
4-Nitrophenol	"	ND	-----	29.9	"	"	"	"	"	
N-Nitrosodi-n-propylamine	"	ND	-----	9.87	"	"	"	"	"	
N-Nitrosodiphenylamine	"	ND	-----	9.87	"	"	"	"	"	
Pentachlorophenol	"	ND	-----	29.9	"	"	"	"	"	
Phenanthrene	"	ND	-----	9.87	"	"	"	"	"	
Phenol	"	ND	-----	9.87	"	"	"	"	"	
Pyrene	"	ND	-----	9.87	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	9.87	"	"	"	"	"	
2,4,5-Trichlorophenol	"	ND	-----	9.87	"	"	"	"	"	
2,4,6-Trichlorophenol	"	ND	-----	9.87	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
2-Fluorophenol				*NR*		*10 - 150 %*	*"*		*"*	***Z3***
Nitrobenzene-d5				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
Phenol-d6				*NR*		*10 - 150 %*	*"*		*"*	***Z3***
p-Terphenyl-d14				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
2,4,6-Tribromophenol				*NR*		*10 - 150 %*	*"*		*"*	***Z3***

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				**RL3**
Acenaphthene	EPA 8270C	ND	-----	9.75	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 04:17	
Acenaphthylene	"	ND	-----	9.75	"	"	"	"	"	
Anthracene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	9.75	"	"	"	"	"	
Benzoic Acid	"	ND	-----	29.6	"	"	"	"	"	
Benzyl alcohol	"	ND	-----	9.75	"	"	"	"	"	
4-Bromophenyl phenyl ether	"	ND	-----	9.75	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
4-Chloro-3-methylphenol	"	ND	-----	9.75	"	"	"	"	"	
4-Chloroaniline	"	ND	-----	59.1	"	"	"	"	"	
Bis(2-chloroethoxy)methane	"	ND	-----	9.75	"	"	"	"	"	
Bis(2-chloroethyl)ether	"	ND	-----	9.75	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	"	ND	-----	9.75	"	"	"	"	"	
2-Chloronaphthalene	"	ND	-----	9.75	"	"	"	"	"	
2-Chlorophenol	"	ND	-----	9.75	"	"	"	"	"	
4-Chlorophenyl phenyl ether	"	ND	-----	9.75	"	"	"	"	"	
Chrysene	"	ND	-----	9.75	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	29.6	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	9.75	"	"	"	"	"	
Dibenzofuran	"	ND	-----	9.75	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	29.6	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	29.6	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	29.6	"	"	"	"	"	
3,3´-Dichlorobenzidine	"	ND	-----	29.6	"	"	"	"	"	
2,4-Dichlorophenol	"	ND	-----	9.75	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
2,4-Dimethylphenol	"	ND	-----	29.6	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	"	ND	-----	29.6	"	"	"	"	"	
2,4-Dinitrophenol	"	ND	-----	59.1	"	"	"	"	"	
2,4-Dinitrotoluene	"	ND	-----	14.8	"	"	"	"	"	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-03 (CB-2-4-09)			Soil			**Sampled: 04/10/09 10:15**				RL3
2,6-Dinitrotoluene	EPA 8270C	ND	-----	14.8	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 04:17	
Bis(2-ethylhexyl)phthalate	"	**38.0**	-----	22.2	"	"	"	"	"	
Fluoranthene	"	ND	-----	9.75	"	"	"	"	"	
Fluorene	"	ND	-----	9.75	"	"	"	"	"	
Hexachlorobenzene	"	ND	-----	9.75	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	29.6	"	"	"	"	"	
Hexachlorocyclopentadiene	"	ND	-----	29.6	"	"	"	"	"	
Hexachloroethane	"	ND	-----	29.6	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	9.75	"	"	"	"	"	
Isophorone	"	ND	-----	9.75	"	"	"	"	"	
2-Methylnaphthalene	"	ND	-----	9.75	"	"	"	"	"	
2-Methylphenol	"	ND	-----	9.75	"	"	"	"	"	
3-,4-Methylphenol	"	ND	-----	9.75	"	"	"	"	"	
Naphthalene	"	ND	-----	9.75	"	"	"	"	"	
2-Nitroaniline	"	ND	-----	9.75	"	"	"	"	"	
3-Nitroaniline	"	ND	-----	29.6	"	"	"	"	"	
4-Nitroaniline	"	ND	-----	9.75	"	"	"	"	"	
Nitrobenzene	"	ND	-----	9.75	"	"	"	"	"	
2-Nitrophenol	"	ND	-----	9.75	"	"	"	"	"	
4-Nitrophenol	"	ND	-----	29.6	"	"	"	"	"	
N-Nitrosodi-n-propylamine	"	ND	-----	9.75	"	"	"	"	"	
N-Nitrosodiphenylamine	"	ND	-----	9.75	"	"	"	"	"	
Pentachlorophenol	"	ND	-----	29.6	"	"	"	"	"	
Phenanthrene	"	ND	-----	9.75	"	"	"	"	"	
Phenol	"	ND	-----	9.75	"	"	"	"	"	
Pyrene	"	ND	-----	9.75	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	9.75	"	"	"	"	"	
2,4,5-Trichlorophenol	"	ND	-----	9.75	"	"	"	"	"	
2,4,6-Trichlorophenol	"	ND	-----	9.75	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				*NR*		*20 - 150 %*	"		"	
2-Fluorophenol				*NR*		*10 - 150 %*	"		"	***Z3***
Nitrobenzene-d5				*NR*		*20 - 150 %*	"		"	***Z3***
Phenol-d6				*NR*		*10 - 150 %*	"		"	***Z3***
p-Terphenyl-d14				*NR*		*20 - 150 %*	"		"	***Z3***
2,4,6-Tribromophenol				*NR*		*10 - 150 %*	"		"	***Z3***

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				**RL3**
Acenaphthene	EPA 8270C	ND	-----	9.87	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 05:01	
Acenaphthylene	"	ND	-----	9.87	"	"	"	"	"	
Anthracene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	9.87	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	9.87	"	"	"	"	"	
Benzoic Acid	"	ND	-----	29.9	"	"	"	"	"	
Benzyl alcohol	"	ND	-----	9.87	"	"	"	"	"	
4-Bromophenyl phenyl ether	"	ND	-----	9.87	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
4-Chloro-3-methylphenol	"	ND	-----	9.87	"	"	"	"	"	
4-Chloroaniline	"	ND	-----	59.8	"	"	"	"	"	
Bis(2-chloroethoxy)methane	"	ND	-----	9.87	"	"	"	"	"	
Bis(2-chloroethyl)ether	"	ND	-----	9.87	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	"	ND	-----	9.87	"	"	"	"	"	
2-Chloronaphthalene	"	ND	-----	9.87	"	"	"	"	"	
2-Chlorophenol	"	ND	-----	9.87	"	"	"	"	"	
4-Chlorophenyl phenyl ether	"	ND	-----	9.87	"	"	"	"	"	
Chrysene	"	ND	-----	9.87	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	29.9	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	9.87	"	"	"	"	"	
Dibenzofuran	"	ND	-----	9.87	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	29.9	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	29.9	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	29.9	"	"	"	"	"	
3,3´-Dichlorobenzidine	"	ND	-----	29.9	"	"	"	"	"	
2,4-Dichlorophenol	"	ND	-----	9.87	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
2,4-Dimethylphenol	"	ND	-----	29.9	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	9.87	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	"	ND	-----	29.9	"	"	"	"	"	
2,4-Dinitrophenol	"	ND	-----	59.8	"	"	"	"	"	
2,4-Dinitrotoluene	"	ND	-----	15.0	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-04 (CB-4-4-09)			Soil			Sampled: 04/10/09 10:55				RL3
2,6-Dinitrotoluene	EPA 8270C	ND	-----	15.0	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 05:01	
Bis(2-ethylhexyl)phthalate	"	**23.4**	-----	22.4	"	"	"	"	"	
Fluoranthene	"	ND	-----	9.87	"	"	"	"	"	
Fluorene	"	ND	-----	9.87	"	"	"	"	"	
Hexachlorobenzene	"	ND	-----	9.87	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	29.9	"	"	"	"	"	
Hexachlorocyclopentadiene	"	ND	-----	29.9	"	"	"	"	"	
Hexachloroethane	"	ND	-----	29.9	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	9.87	"	"	"	"	"	
Isophorone	"	ND	-----	9.87	"	"	"	"	"	
2-Methylnaphthalene	"	ND	-----	9.87	"	"	"	"	"	
2-Methylphenol	"	ND	-----	9.87	"	"	"	"	"	
3-,4-Methylphenol	"	ND	-----	9.87	"	"	"	"	"	
Naphthalene	"	ND	-----	9.87	"	"	"	"	"	
2-Nitroaniline	"	ND	-----	9.87	"	"	"	"	"	
3-Nitroaniline	"	ND	-----	29.9	"	"	"	"	"	
4-Nitroaniline	"	ND	-----	9.87	"	"	"	"	"	
Nitrobenzene	"	ND	-----	9.87	"	"	"	"	"	
2-Nitrophenol	"	ND	-----	9.87	"	"	"	"	"	
4-Nitrophenol	"	ND	-----	29.9	"	"	"	"	"	
N-Nitrosodi-n-propylamine	"	ND	-----	9.87	"	"	"	"	"	
N-Nitrosodiphenylamine	"	ND	-----	9.87	"	"	"	"	"	
Pentachlorophenol	"	ND	-----	29.9	"	"	"	"	"	
Phenanthrene	"	ND	-----	9.87	"	"	"	"	"	
Phenol	"	ND	-----	9.87	"	"	"	"	"	
Pyrene	"	ND	-----	9.87	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	9.87	"	"	"	"	"	
2,4,5-Trichlorophenol	"	ND	-----	9.87	"	"	"	"	"	
2,4,6-Trichlorophenol	"	ND	-----	9.87	"	"	"	"	"	

Surrogate(s):		Result	Range			Notes
Surrogate(s):	*2-Fluorobiphenyl*	*NR*	*20 - 150 %*	"	"	***Z3***
	2-Fluorophenol	*NR*	*10 - 150 %*	"	"	***Z3***
	Nitrobenzene-d5	*NR*	*20 - 150 %*	"	"	***Z3***
	Phenol-d6	*NR*	*10 - 150 %*	"	"	***Z3***
	p-Terphenyl-d14	*NR*	*20 - 150 %*	"	"	***Z3***
	2,4,6-Tribromophenol	*NR*	*10 - 150 %*	"	"	***Z3***

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				**RL3**
Acenaphthene	EPA 8270C	ND	-----	9.89	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 05:45	
Acenaphthylene	"	ND	-----	9.89	"	"	"	"	"	
Anthracene	"	ND	-----	9.89	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	9.89	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	9.89	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	9.89	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	9.89	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	9.89	"	"	"	"	"	
Benzoic Acid	"	ND	-----	30.0	"	"	"	"	"	
Benzyl alcohol	"	ND	-----	9.89	"	"	"	"	"	
4-Bromophenyl phenyl ether	"	ND	-----	9.89	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	9.89	"	"	"	"	"	
4-Chloro-3-methylphenol	"	ND	-----	9.89	"	"	"	"	"	
4-Chloroaniline	"	ND	-----	59.9	"	"	"	"	"	
Bis(2-chloroethoxy)methane	"	ND	-----	9.89	"	"	"	"	"	
Bis(2-chloroethyl)ether	"	ND	-----	9.89	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	"	ND	-----	9.89	"	"	"	"	"	
2-Chloronaphthalene	"	ND	-----	9.89	"	"	"	"	"	
2-Chlorophenol	"	ND	-----	9.89	"	"	"	"	"	
4-Chlorophenyl phenyl ether	"	ND	-----	9.89	"	"	"	"	"	
Chrysene	"	ND	-----	9.89	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	30.0	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	9.89	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	9.89	"	"	"	"	"	
Dibenzofuran	"	ND	-----	9.89	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	30.0	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	30.0	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	30.0	"	"	"	"	"	
3,3´-Dichlorobenzidine	"	ND	-----	30.0	"	"	"	"	"	
2,4-Dichlorophenol	"	ND	-----	9.89	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	9.89	"	"	"	"	"	
2,4-Dimethylphenol	"	ND	-----	30.0	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	9.89	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	"	ND	-----	30.0	"	"	"	"	"	
2,4-Dinitrophenol	"	ND	-----	59.9	"	"	"	"	"	
2,4-Dinitrotoluene	"	ND	-----	15.0	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				**RL3**
2,6-Dinitrotoluene	EPA 8270C	ND	-----	15.0	mg/kg	3x	9040654	04/17/09 10:00	04/18/09 05:45	
Bis(2-ethylhexyl)phthalate	"	**34.9**	-----	22.5	"	"	"	"	"	
Fluoranthene	"	ND	-----	9.89	"	"	"	"	"	
Fluorene	"	ND	-----	9.89	"	"	"	"	"	
Hexachlorobenzene	"	ND	-----	9.89	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	30.0	"	"	"	"	"	
Hexachlorocyclopentadiene	"	ND	-----	30.0	"	"	"	"	"	
Hexachloroethane	"	ND	-----	30.0	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	9.89	"	"	"	"	"	
Isophorone	"	ND	-----	9.89	"	"	"	"	"	
2-Methylnaphthalene	"	ND	-----	9.89	"	"	"	"	"	
2-Methylphenol	"	ND	-----	9.89	"	"	"	"	"	
3-,4-Methylphenol	"	ND	-----	9.89	"	"	"	"	"	
Naphthalene	"	ND	-----	9.89	"	"	"	"	"	
2-Nitroaniline	"	ND	-----	9.89	"	"	"	"	"	
3-Nitroaniline	"	ND	-----	30.0	"	"	"	"	"	
4-Nitroaniline	"	ND	-----	9.89	"	"	"	"	"	
Nitrobenzene	"	ND	-----	9.89	"	"	"	"	"	
2-Nitrophenol	"	ND	-----	9.89	"	"	"	"	"	
4-Nitrophenol	"	ND	-----	30.0	"	"	"	"	"	
N-Nitrosodi-n-propylamine	"	ND	-----	9.89	"	"	"	"	"	
N-Nitrosodiphenylamine	"	ND	-----	9.89	"	"	"	"	"	
Pentachlorophenol	"	ND	-----	30.0	"	"	"	"	"	
Phenanthrene	"	ND	-----	9.89	"	"	"	"	"	
Phenol	"	ND	-----	9.89	"	"	"	"	"	
Pyrene	"	ND	-----	9.89	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	9.89	"	"	"	"	"	
2,4,5-Trichlorophenol	"	ND	-----	9.89	"	"	"	"	"	
2,4,6-Trichlorophenol	"	ND	-----	9.89	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				*NR*		*20 - 150 %*	"		"	***Z3***
2-Fluorophenol				*NR*		*10 - 150 %*	"		"	***Z3***
Nitrobenzene-d5				*NR*		*20 - 150 %*	"		"	***Z3***
Phenol-d6				*NR*		*10 - 150 %*	"		"	***Z3***
p-Terphenyl-d14				*NR*		*20 - 150 %*	"		"	***Z3***
2,4,6-Tribromophenol				*NR*		*10 - 150 %*	"		"	***Z3***

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

PSD0394-06 (CB-6-4-09) Soil Sampled: 04/10/09 12:50 RL3

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Acenaphthene	EPA 8270C	ND	-----	9.75	mg/kg	3x	9040654	04/17/09 10:00	04/22/09 23:20	
Acenaphthylene	"	ND	-----	9.75	"	"	"	"	"	
Anthracene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	9.75	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	9.75	"	"	"	"	"	
Benzoic Acid	"	ND	-----	29.6	"	"	"	"	"	
Benzyl alcohol	"	ND	-----	9.75	"	"	"	"	"	
4-Bromophenyl phenyl ether	"	ND	-----	9.75	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
4-Chloro-3-methylphenol	"	ND	-----	9.75	"	"	"	"	"	
4-Chloroaniline	"	ND	-----	59.1	"	"	"	"	"	
Bis(2-chloroethoxy)methane	"	ND	-----	9.75	"	"	"	"	"	
Bis(2-chloroethyl)ether	"	ND	-----	9.75	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	"	ND	-----	9.75	"	"	"	"	"	
2-Chloronaphthalene	"	ND	-----	9.75	"	"	"	"	"	
2-Chlorophenol	"	ND	-----	9.75	"	"	"	"	"	
4-Chlorophenyl phenyl ether	"	ND	-----	9.75	"	"	"	"	"	
Chrysene	"	ND	-----	9.75	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	29.6	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	9.75	"	"	"	"	"	
Dibenzofuran	"	ND	-----	9.75	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	29.6	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	29.6	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	29.6	"	"	"	"	"	
3,3´-Dichlorobenzidine	"	ND	-----	29.6	"	"	"	"	"	
2,4-Dichlorophenol	"	ND	-----	9.75	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
2,4-Dimethylphenol	"	ND	-----	29.6	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	9.75	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	"	ND	-----	29.6	"	"	"	"	"	
2,4-Dinitrophenol	"	ND	-----	59.1	"	"	"	"	"	
2,4-Dinitrotoluene	"	ND	-----	14.8	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				**RL3**
2,6-Dinitrotoluene	EPA 8270C	ND	-----	14.8	mg/kg	3x	9040654	04/17/09 10:00	04/22/09 23:20	
Bis(2-ethylhexyl)phthalate	"	**65.8**	-----	22.2	"	"	"	"	"	
Fluoranthene	"	ND	-----	9.75	"	"	"	"	"	
Fluorene	"	ND	-----	9.75	"	"	"	"	"	
Hexachlorobenzene	"	ND	-----	9.75	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	29.6	"	"	"	"	"	
Hexachlorocyclopentadiene	"	ND	-----	29.6	"	"	"	"	"	
Hexachloroethane	"	ND	-----	29.6	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	9.75	"	"	"	"	"	
Isophorone	"	ND	-----	9.75	"	"	"	"	"	
2-Methylnaphthalene	"	ND	-----	9.75	"	"	"	"	"	
2-Methylphenol	"	ND	-----	9.75	"	"	"	"	"	
3-,4-Methylphenol	"	ND	-----	9.75	"	"	"	"	"	
Naphthalene	"	ND	-----	9.75	"	"	"	"	"	
2-Nitroaniline	"	ND	-----	9.75	"	"	"	"	"	
3-Nitroaniline	"	ND	-----	29.6	"	"	"	"	"	
4-Nitroaniline	"	ND	-----	9.75	"	"	"	"	"	
Nitrobenzene	"	ND	-----	9.75	"	"	"	"	"	
2-Nitrophenol	"	ND	-----	9.75	"	"	"	"	"	
4-Nitrophenol	"	ND	-----	29.6	"	"	"	"	"	
N-Nitrosodi-n-propylamine	"	ND	-----	9.75	"	"	"	"	"	
N-Nitrosodiphenylamine	"	ND	-----	9.75	"	"	"	"	"	
Pentachlorophenol	"	ND	-----	29.6	"	"	"	"	"	
Phenanthrene	"	ND	-----	9.75	"	"	"	"	"	
Phenol	"	ND	-----	9.75	"	"	"	"	"	
Pyrene	"	ND	-----	9.75	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	9.75	"	"	"	"	"	
2,4,5-Trichlorophenol	"	ND	-----	9.75	"	"	"	"	"	
2,4,6-Trichlorophenol	"	ND	-----	9.75	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
2-Fluorophenol				*NR*		*10 - 150 %*	*"*		*"*	***Z3***
Nitrobenzene-d5				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
Phenol-d6				*NR*		*10 - 150 %*	*"*		*"*	***Z3***
p-Terphenyl-d14				*NR*		*20 - 150 %*	*"*		*"*	***Z3***
2,4,6-Tribromophenol				*NR*		*10 - 150 %*	*"*		*"*	***Z3***

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				**RL7**
2-Methylnaphthalene	EPA 8270m	ND	-----	1450	ug/kg dry	10x	9040656	04/17/09 18:30	04/21/09 13:39	
Acenaphthene	"	ND	-----	1450	"	"	"	"	"	
Acenaphthylene	"	ND	-----	1450	"	"	"	"	"	
Anthracene	"	ND	-----	1450	"	"	"	"	"	
Benzo (a) anthracene	"	**6950**	-----	1450	"	"	"	"	"	
Benzo (a) pyrene	"	**3980**	-----	1450	"	"	"	"	"	
Benzo (b) fluoranthene	"	**8420**	-----	1450	"	"	"	"	"	
Benzo (ghi) perylene	"	**4160**	-----	1450	"	"	"	"	"	
Benzo (k) fluoranthene	"	**4740**	-----	1450	"	"	"	"	"	
Chrysene	"	**17100**	-----	1450	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	1450	"	"	"	"	"	
Fluoranthene	"	**20400**	-----	1450	"	"	"	"	"	
Fluorene	"	ND	-----	1450	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**3290**	-----	1450	"	"	"	"	"	
Naphthalene	"	ND	-----	1450	"	"	"	"	"	
Phenanthrene	"	**9290**	-----	1450	"	"	"	"	"	
Pyrene	"	**20800**	-----	1450	"	"	"	"	"	
Surrogate(s): Fluorene-d10				*NR*		*24 - 125 %*	*"*		*"*	***Z3***
Pyrene-d10				*NR*		*41 - 141 %*	*"*		*"*	***Z3***
Benzo (a) pyrene-d12				*NR*		*38 - 143 %*	*"*		*"*	***Z3***
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL7**
2-Methylnaphthalene	EPA 8270m	**1010**	-----	576	ug/kg dry	10x	9040656	04/17/09 18:30	04/21/09 15:15	
Acenaphthene	"	**2190**	-----	576	"	"	"	"	"	
Acenaphthylene	"	ND	-----	576	"	"	"	"	"	
Anthracene	"	**1550**	-----	576	"	"	"	"	"	
Benzo (a) anthracene	"	**4840**	-----	576	"	"	"	"	"	
Benzo (a) pyrene	"	**2620**	-----	576	"	"	"	"	"	
Benzo (b) fluoranthene	"	**7530**	-----	576	"	"	"	"	"	
Benzo (ghi) perylene	"	**3170**	-----	576	"	"	"	"	"	
Benzo (k) fluoranthene	"	**4520**	-----	576	"	"	"	"	"	
Chrysene	"	**13400**	-----	576	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**863**	-----	576	"	"	"	"	"	
Fluoranthene	"	**18200**	-----	576	"	"	"	"	"	
Fluorene	"	**1010**	-----	576	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**2620**	-----	576	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL7**
Naphthalene	EPA 8270m	**2540**	-----	576	ug/kg dry	10x	9040656	04/17/09 18:30	04/21/09 15:15	
Phenanthrene	"	**7500**	-----	576	"	"	"	"	"	
Pyrene	"	**12900**	-----	576	"	"	"	"	"	
Surrogate(s): Fluorene-d10				*120%*		*24 - 125 %*	*"*			*"*
Pyrene-d10				*101%*		*41 - 141 %*	*"*			*"*
Benzo (a) pyrene-d12				*116%*		*38 - 143 %*	*"*			*"*
PSD0394-03RE1 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				**RL7**
2-Methylnaphthalene	EPA 8270m	ND	-----	692	ug/kg dry	5x	9040881	04/24/09 12:30	04/24/09 23:28	
Acenaphthene	"	ND	-----	692	"	"	"	"	"	
Acenaphthylene	"	ND	-----	692	"	"	"	"	"	
Anthracene	"	**1260**	-----	692	"	"	"	"	"	
Benzo (a) anthracene	"	**3690**	-----	692	"	"	"	"	"	
Benzo (a) pyrene	"	**2220**	-----	692	"	"	"	"	"	
Benzo (b) fluoranthene	"	**6930**	-----	692	"	"	"	"	"	
Benzo (ghi) perylene	"	**2680**	-----	692	"	"	"	"	"	
Benzo (k) fluoranthene	"	**4040**	-----	692	"	"	"	"	"	
Chrysene	"	**11600**	-----	692	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**747**	-----	692	"	"	"	"	"	
Fluoranthene	"	**16900**	-----	692	"	"	"	"	"	
Fluorene	"	ND	-----	692	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**2290**	-----	692	"	"	"	"	"	
Naphthalene	"	ND	-----	692	"	"	"	"	"	
Phenanthrene	"	**5850**	-----	692	"	"	"	"	"	
Pyrene	"	**10100**	-----	692	"	"	"	"	"	
Surrogate(s): Fluorene-d10				*112%*		*24 - 125 %*	*"*			*"*
Pyrene-d10				*136%*		*41 - 141 %*	*"*			*"*
Benzo (a) pyrene-d12				*127%*		*38 - 143 %*	*"*			*"*
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				**RL3**
2-Methylnaphthalene	EPA 8270m	ND	-----	866	ug/kg dry	10x	9040656	04/17/09 18:30	04/22/09 16:15	
Acenaphthene	"	ND	-----	866	"	"	"	"	"	
Acenaphthylene	"	ND	-----	866	"	"	"	"	"	
Anthracene	"	ND	-----	866	"	"	"	"	"	
Benzo (a) anthracene	"	**5010**	-----	866	"	"	"	"	"	
Benzo (a) pyrene	"	**2200**	-----	866	"	"	"	"	"	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				RL3
Benzo (b) fluoranthene	EPA 8270m	**9030**	-----	866	ug/kg dry	10x	9040656	04/17/09 18:30	04/22/09 16:15	
Benzo (ghi) perylene	"	**3260**	-----	866	"	"	"	"	"	
Benzo (k) fluoranthene	"	**4770**	-----	866	"	"	"	"	"	
Chrysene	"	**14800**	-----	866	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**914**	-----	866	"	"	"	"	"	
Fluoranthene	"	**17000**	-----	866	"	"	"	"	"	
Fluorene	"	ND	-----	866	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**2630**	-----	866	"	"	"	"	"	
Naphthalene	"	ND	-----	866	"	"	"	"	"	
Phenanthrene	"	**3250**	-----	866	"	"	"	"	"	
Pyrene	"	**12000**	-----	866	"	"	"	"	"	
Surrogate(s): Fluorene-d10				*120%*		*24 - 125 %*	*"*		*"*	
Pyrene-d10				*117%*		*41 - 141 %*	*"*		*"*	
Benzo (a) pyrene-d12				*113%*		*38 - 143 %*	*"*		*"*	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				RL3
2-Methylnaphthalene	EPA 8270m	ND	-----	1550	ug/kg dry	20x	9040656	04/17/09 18:30	04/21/09 16:51	
Acenaphthene	"	ND	-----	1550	"	"	"	"	"	
Acenaphthylene	"	ND	-----	1550	"	"	"	"	"	
Anthracene	"	ND	-----	1550	"	"	"	"	"	
Benzo (a) anthracene	"	**6770**	-----	1550	"	"	"	"	"	
Benzo (a) pyrene	"	**3080**	-----	1550	"	"	"	"	"	
Benzo (b) fluoranthene	"	**12400**	-----	1550	"	"	"	"	"	
Benzo (ghi) perylene	"	**4940**	-----	1550	"	"	"	"	"	
Benzo (k) fluoranthene	"	**5810**	-----	1550	"	"	"	"	"	
Chrysene	"	**20600**	-----	1550	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	1550	"	"	"	"	"	
Fluoranthene	"	**21300**	-----	1550	"	"	"	"	"	
Fluorene	"	ND	-----	1550	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**3730**	-----	1550	"	"	"	"	"	
Naphthalene	"	ND	-----	1550	"	"	"	"	"	
Phenanthrene	"	**6110**	-----	1550	"	"	"	"	"	
Pyrene	"	**16000**	-----	1550	"	"	"	"	"	
Surrogate(s): Fluorene-d10				*NR*		*24 - 125 %*	*"*		*"*	***Z3***
Pyrene-d10				*NR*		*41 - 141 %*	*"*		*"*	***Z3***
Benzo (a) pyrene-d12				*NR*		*38 - 143 %*	*"*		*"*	***Z3***

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

PSD0394-06 (CB-6-4-09) **Soil** **Sampled: 04/10/09 12:50** **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
2-Methylnaphthalene	EPA 8270m	ND	-----	716	ug/kg dry	10x	9040656	04/17/09 18:30	04/21/09 17:23	
Acenaphthene	"	ND	-----	716	"	"	"	"	"	
Acenaphthylene	"	ND	-----	716	"	"	"	"	"	
Anthracene	"	ND	-----	716	"	"	"	"	"	
Benzo (a) anthracene	"	**1450**	-----	716	"	"	"	"	"	
Benzo (a) pyrene	"	**801**	-----	716	"	"	"	"	"	
Benzo (b) fluoranthene	"	**2260**	-----	716	"	"	"	"	"	
Benzo (ghi) perylene	"	**1220**	-----	716	"	"	"	"	"	
Benzo (k) fluoranthene	"	**1240**	-----	716	"	"	"	"	"	
Chrysene	"	**4250**	-----	716	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	716	"	"	"	"	"	
Fluoranthene	"	**5080**	-----	716	"	"	"	"	"	
Fluorene	"	ND	-----	716	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**890**	-----	716	"	"	"	"	"	
Naphthalene	"	ND	-----	716	"	"	"	"	"	
Phenanthrene	"	**1700**	-----	716	"	"	"	"	"	
Pyrene	"	**3620**	-----	716	"	"	"	"	"	

Surrogate(s):	*Fluorene-d10*	*117%*	*24 - 125 %*	*"*	*"*
	Pyrene-d10	*137%*	*41 - 141 %*	*"*	*"*
	Benzo (a) pyrene-d12	*106%*	*38 - 143 %*	*"*	*"*

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				**RL7**
Dimethyl phthalate	EPA 8270m	ND	-----	5810	ug/kg dry	20x	9040656	04/17/09 18:30	04/22/09 17:58	
Diethyl phthalate	"	ND	-----	5810	"	"	"	"	"	
Di-n-butyl phthalate	"	**10500**	-----	5810	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	290000	"	1000x	"	"	04/22/09 21:37	**RL1**
Bis(2-ethylhexyl)phthalate	"	**2230000**	-----	290000	"	"	"	"	"	**B1**
Di-n-octyl phthalate	"	**617000**	-----	290000	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				*97.2%*		*10 - 150 %*	*20x*		*04/22/09 17:58*	
p-Terphenyl-d14				*NR*		*10 - 150 %*	*1000x*		*04/22/09 21:37*	***Z3***
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				**RL7**
Dimethyl phthalate	EPA 8270m	ND	-----	2300	ug/kg dry	20x	9040656	04/17/09 18:30	04/22/09 18:35	
Diethyl phthalate	"	ND	-----	2300	"	"	"	"	"	
Di-n-butyl phthalate	"	**4520**	-----	2300	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	-----	115000	"	1000x	"	"	04/22/09 22:14	
Bis(2-ethylhexyl)phthalate	"	**189000**	-----	115000	"	"	"	"	"	**B1**
Di-n-octyl phthalate	"	ND	-----	15000	"	20x	"	"	04/22/09 18:35	**RL1**
Surrogate(s): 2-Fluorobiphenyl				*102%*		*10 - 150 %*	*"*		*"*	
p-Terphenyl-d14				*NR*		*10 - 150 %*	*1000x*		*04/22/09 22:14*	***Z3***
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				**RL7**
Dimethyl phthalate	EPA 8270m	ND	-----	2750	ug/kg dry	20x	9040656	04/17/09 18:30	04/22/09 19:11	
Diethyl phthalate	"	ND	-----	2750	"	"	"	"	"	
Di-n-butyl phthalate	"	**4050**	-----	2750	"	"	"	"	"	
Butyl benzyl phthalate	"	**8560**	-----	2750	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	**209000**	-----	27500	"	200x	"	"	04/22/09 22:50	**B1**
Di-n-octyl phthalate	"	**26400**	-----	2750	"	20x	"	"	04/22/09 19:11	
Surrogate(s): 2-Fluorobiphenyl				*109%*		*10 - 150 %*	*"*		*"*	
p-Terphenyl-d14				*135%*		*10 - 150 %*	*"*		*"*	
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				**RL7**
Dimethyl phthalate	EPA 8270m	ND	-----	3460	ug/kg dry	20x	9040656	04/17/09 18:30	04/22/09 19:48	
Diethyl phthalate	"	ND	-----	3460	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	3460	"	"	"	"	"	
Butyl benzyl phthalate	"	**3550**	-----	3460	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	**161000**	-----	34600	"	200x	"	"	04/22/09 23:27	**B1**

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Phthalates per EPA 8270-SIM
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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				**RL7**
Di-n-octyl phthalate	EPA 8270m	**7930**	-----	3460	ug/kg dry	20x	9040656	04/17/09 18:30	04/22/09 19:48	
Surrogate(s): 2-Fluorobiphenyl				*109%*		*10 - 150 %*	*"*		*"*	
p-Terphenyl-d14				*135%*		*10 - 150 %*	*"*		*"*	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				**RL7**
Dimethyl phthalate	EPA 8270m	ND	-----	6190	ug/kg dry	40x	9040656	04/17/09 18:30	04/22/09 21:01	
Diethyl phthalate	"	ND	-----	6190	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	6190	"	"	"	"	"	
Butyl benzyl phthalate	"	**6550**	-----	6190	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	**288000**	-----	61900	"	400x	"	"	04/23/09 00:40	**B1**
Di-n-octyl phthalate	"	ND	-----	61900	"	"	"	"	"	**RL1**
Surrogate(s): 2-Fluorobiphenyl				*103%*		*10 - 150 %*	*40x*		*04/22/09 21:01*	
p-Terphenyl-d14				*133%*		*10 - 150 %*	*"*		*"*	
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				**RL7**
Dimethyl phthalate	EPA 8270m	ND	-----	2860	ug/kg dry	20x	9040656	04/17/09 18:30	04/22/09 20:24	
Diethyl phthalate	"	ND	-----	2860	"	"	"	"	"	
Di-n-butyl phthalate	"	**7360**	-----	2860	"	"	"	"	"	
Butyl benzyl phthalate	"	**8500**	-----	2860	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	**87500**	-----	28600	"	200x	"	"	04/23/09 00:03	**B1**
Di-n-octyl phthalate	"	**8340**	-----	2860	"	20x	"	"	04/22/09 20:24	
Surrogate(s): 2-Fluorobiphenyl				*76.6%*		*10 - 150 %*	*"*		*"*	
p-Terphenyl-d14				*124%*		*10 - 150 %*	*"*		*"*	

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P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Percent Dry Weight (Solids) per Standard Methods

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				
% Solids	NCA SOP	**46.0**	-----	0.0100	% by Weight	1x	9040526	04/14/09 13:48	04/14/09 13:48	
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				
% Solids	NCA SOP	**57.9**	-----	0.0100	% by Weight	1x	9040526	04/14/09 13:48	04/14/09 13:48	
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				
% Solids	NCA SOP	**48.4**	-----	0.0100	% by Weight	1x	9040526	04/14/09 13:48	04/14/09 13:48	
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				
% Solids	NCA SOP	**38.6**	-----	0.0100	% by Weight	1x	9040526	04/14/09 13:48	04/14/09 13:48	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				
% Solids	NCA SOP	**43.2**	-----	0.0100	% by Weight	1x	9040526	04/14/09 13:48	04/14/09 13:48	
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				
% Solids	NCA SOP	**46.6**	-----	0.0100	% by Weight	1x	9040526	04/14/09 13:48	04/14/09 13:48	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organic Carbon, Total (TOC)

TestAmerica Tacoma

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0394-01 (CB-5-4-09)			**Soil**			**Sampled: 04/10/09 08:55**				
Total Organic Carbon	9060	**140000**	-----	2000	mg/Kg	1x	42885	04/22/09 10:05	04/22/09 10:05	
PSD0394-02 (CB-1-4-09)			**Soil**			**Sampled: 04/10/09 09:40**				
Total Organic Carbon	9060	**71000**	-----	2000	mg/Kg	1x	42885	04/22/09 10:05	04/22/09 10:05	
PSD0394-03 (CB-2-4-09)			**Soil**			**Sampled: 04/10/09 10:15**				
Total Organic Carbon	9060	**87000**	-----	2000	mg/Kg	1x	42885	04/22/09 10:05	04/22/09 10:05	
PSD0394-04 (CB-4-4-09)			**Soil**			**Sampled: 04/10/09 10:55**				
Total Organic Carbon	9060	**61000**	-----	2000	mg/Kg	1x	42885	04/22/09 10:05	04/22/09 10:05	
PSD0394-05 (CB-3-4-09)			**Soil**			**Sampled: 04/10/09 12:15**				
Total Organic Carbon	9060	**110000**	-----	2000	mg/Kg	1x	42885	04/22/09 10:05	04/22/09 10:05	
PSD0394-06 (CB-6-4-09)			**Soil**			**Sampled: 04/10/09 12:50**				
Total Organic Carbon	9060	**120000**	-----	2000	mg/Kg	1x	42885	04/22/09 10:05	04/22/09 10:05	

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P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

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QC Batch: 9040574 **Soil Preparation Method: EPA 3050**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040574-BLK1)								Extracted: 04/15/09 11:44						
Antimony	EPA 6020	ND	---	0.495	mg/kg wet	1x	--	--	--	--	--	--	04/16/09 18:52	
Arsenic	"	ND	---	0.495	"	"	--	--	--	--	--	--	"	
Cadmium	"	ND	---	0.495	"	"	--	--	--	--	--	--	04/16/09 01:25	
Chromium	"	ND	---	0.495	"	"	--	--	--	--	--	--	"	
Copper	"	ND	---	1.98	"	"	--	--	--	--	--	--	04/16/09 18:52	
Lead	"	ND	---	0.495	"	"	--	--	--	--	--	--	04/16/09 01:25	
Manganese	"	ND	---	0.990	"	"	--	--	--	--	--	--	"	
Nickel	"	ND	---	0.990	"	"	--	--	--	--	--	--	"	
Selenium	"	ND	---	0.495	"	"	--	--	--	--	--	--	"	
Silver	"	ND	---	0.495	"	"	--	--	--	--	--	--	"	
Zinc	"	ND	---	1.98	"	"	--	--	--	--	--	--	"	
LCS (9040574-BS1)								Extracted: 04/15/09 11:44						
Antimony	EPA 6020	22.5	---	0.495	mg/kg wet	1x	--	24.8	90.7%	(80-120)	--	--	04/16/09 19:00	
Arsenic	"	41.1	---	0.495	"	"	--	49.5	82.9%	"	--	--	"	
Cadmium	"	42.7	---	0.495	"	"	--	"	86.2%	"	--	--	04/16/09 01:33	
Chromium	"	44.4	---	0.495	"	"	--	"	89.6%	"	--	--	"	
Copper	"	44.0	---	1.98	"	"	--	"	88.9%	"	--	--	04/16/09 19:00	
Lead	"	46.0	---	0.495	"	"	--	"	92.9%	"	--	--	04/16/09 01:33	
Manganese	"	44.0	---	0.990	"	"	--	"	88.8%	"	--	--	"	
Nickel	"	43.1	---	0.990	"	"	--	"	87.1%	"	--	--	"	
Selenium	"	42.3	---	0.495	"	"	--	"	85.4%	"	--	--	"	
Silver	"	20.6	---	0.495	"	"	--	24.8	83.3%	"	--	--	"	
Zinc	"	43.3	---	1.98	"	"	--	49.5	87.4%	"	--	--	"	
Matrix Spike (9040574-MS1)					QC Source: PSD0394-01			Extracted: 04/15/09 11:44						
Antimony	EPA 6020	414	---	109	mg/kg dry	100x	471	54.3	-105%	(70-130)	--	--	04/16/09 20:05	MHA
Arsenic	"	85.9	---	109	"	"	11.4	109	68.5%	(75-125)	--	--	"	M8
Cadmium	"	117	---	1.09	"	1x	21.2	"	88.4%	"	--	--	04/16/09 02:38	
Chromium	"	582	---	109	"	100x	802	"	-203%	"	--	--	04/16/09 20:05	MHA
Copper	"	135000	---	870	"	200x	80500	"	50500	"	--	--	04/16/09 23:18	MHA
Lead	"	2870	---	109	"	100x	2880	"	-12.6%	"	--	--	04/16/09 20:05	MHA
Manganese	"	597	---	2.17	"	1x	797	"	-184%	"	--	--	04/16/09 02:38	MHA
Nickel	"	500	---	435	"	200x	419	"	74.3%	"	--	--	04/16/09 23:18	MHA
Selenium	"	93.6	---	1.09	"	1x	1.40	"	84.8%	"	--	--	04/16/09 02:38	
Silver	"	66.6	---	1.09	"	"	23.7	54.3	78.9%	"	--	--	"	
Zinc	"	3090	---	435	"	100x	37500	109	-31600	"	--	--	04/16/09 20:05	MHA

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Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

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QC Batch: 9040574 **Soil Preparation Method: EPA 3050**

Matrix Spike Dup (9040574-MSD1) **QC Source: PSD0394-01** **Extracted: 04/15/09 11:44**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Antimony	EPA 6020	1000	---	107	mg/kg dry	100x	471	53.3	1000%	(70-130)	83.3%	(40)	04/16/09 20:30	MHA
Arsenic	"	100	---	107	"	"	11.4	107	83.3%	(75-125)	15.4%	"	"	
Cadmium	"	116	---	1.07	"	1x	21.2	"	88.6%	"	1.43%	"	04/16/09 03:02	
Chromium	"	1560	---	107	"	100x	802	"	711%	"	91.4%	"	04/16/09 20:30	MHA
Copper	"	23100	---	426	"	"	80500	"	-53900	"	142%	"	"	MHA
Lead	"	3240	---	107	"	"	2880	"	339%	"	12.3%	"	"	MHA
Manganese	"	658	---	2.13	"	1x	797	"	-130%	"	9.76%	"	04/16/09 03:02	MHA
Nickel	"	1130	---	213	"	100x	419	"	671%	"	77.6%	"	04/16/09 23:26	MHA
Selenium	"	102	---	1.07	"	1x	1.40	"	94.2%	"	8.47%	"	04/16/09 03:02	
Silver	"	64.6	---	1.07	"	"	23.7	53.3	76.7%	"	3.06%	"	"	
Zinc	"	2400	---	426	"	100x	37500	107	-32900	"	25.1%	"	04/16/09 20:30	MHA

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

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P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Total Mercury per EPA Method 7471A - Laboratory Quality Control Results

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QC Batch: 9040532 **Soil Preparation Method: EPA 7471A**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040532-BLK1)								**Extracted: 04/14/09 14:43**						
Mercury	EPA 7471A	ND	---	0.0976	mg/kg wet	1x	--	--	--	--	--	--	04/14/09 16:07	
LCS (9040532-BS1)								**Extracted: 04/14/09 14:43**						
Mercury	EPA 7471A	0.613	---	0.0935	mg/kg wet	1x	--	0.584	105%	(80-120)	--	--	04/14/09 16:09	
LCS Dup (9040532-BSD1)								**Extracted: 04/14/09 14:43**						
Mercury	EPA 7471A	0.621	---	0.0905	mg/kg wet	1x	--	0.566	110%	(80-120)	1.40%	(20)	04/14/09 16:12	
Duplicate (9040532-DUP1)				**QC Source: PSD0394-03**				**Extracted: 04/14/09 14:43**						
Mercury	EPA 7471A	0.227	---	0.189	mg/kg dry	1x	0.241	--	--	--	6.00%	(40)	04/14/09 16:16	
Matrix Spike (9040532-MS1)				**QC Source: PSD0394-03**				**Extracted: 04/14/09 14:43**						
Mercury	EPA 7471A	1.26	---	0.186	mg/kg dry	1x	0.241	1.16	87.5%	(75-125)	--	--	04/14/09 16:19	
Matrix Spike (9040532-MSD)				**QC Source: PSD0394-03**				**Extracted: 04/14/09 14:43**						
Mercury	EPA 7471A	1.36	---	0.186	mg/kg dry	1x	0.241	1.16	96.2%	(75-125)	--	--	04/14/09 16:22	

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Organochlorine Pesticides per EPA Method 8081A - Laboratory Quality Control Results

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QC Batch: 9040554 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040554-BLK1)								**Extracted: 04/15/09 15:45**						
Aldrin	EPA 8081A	ND	---	0.670	ug/kg wet	1x	--	--	--	--	--	--	04/20/09 17:50	
alpha-BHC	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
beta-BHC	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
delta-BHC	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
gamma-BHC (Lindane)	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
gamma-Chlordane	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
alpha-Chlordane	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Chlordane (tech)	"	ND	---	15.0	"	"	--	--	--	--	--	--	"	
4,4´-DDD	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
4,4´-DDE	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
4,4´-DDT	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Dieldrin	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Endosulfan I	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Endosulfan II	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Endosulfan sulfate	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Endrin	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Endrin aldehyde	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Endrin ketone	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Heptachlor	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Heptachlor epoxide	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Methoxychlor	"	ND	---	0.670	"	"	--	--	--	--	--	--	"	
Toxaphene	"	ND	---	20.0	"	"	--	--	--	--	--	--	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene		*Recovery: 73.0%*		*Limits: 36-140%*		*"*							*04/20/09 17:50*	
LCS (9040554-BS1)								**Extracted: 04/15/09 15:45**						MNR
Aldrin	EPA 8081A	2.83	---	0.670	ug/kg wet	1x	--	3.33	84.8%	(64-136)	--	--	04/20/09 18:17	
gamma-BHC (Lindane)	"	2.94	---	0.670	"	"	--	"	88.2%	(62-140)	--	--	"	
4,4´-DDT	"	3.22	---	0.670	"	"	--	"	96.6%	(65-130)	--	--	"	
Dieldrin	"	2.97	---	0.670	"	"	--	"	89.0%	(70-135)	--	--	"	
Endrin	"	2.94	---	0.670	"	"	--	"	88.2%	(65-135)	--	--	"	
Heptachlor	"	3.06	---	0.670	"	"	--	"	91.8%	(48-124)	--	--	"	
Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene		*Recovery: 82.2%*		*Limits: 36-140%*		*"*							*04/20/09 18:17*	

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P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

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QC Batch: 9040556 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040556-BLK1)								**Extracted: 04/15/09 15:00**						
Aroclor 1016	EPA 8082	ND	---	6.66	ug/kg wet	1x	--	--	--	--	--	--	04/23/09 20:38	
Aroclor 1221	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	6.66	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	6.66	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	6.66	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	6.66	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	6.66	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 94.0%*		*Limits: 16-149%*		*"*							*04/23/09 20:38*	
LCS (9040556-BS1)								**Extracted: 04/15/09 15:00**						MNR
Aroclor 1016	EPA 8082	34.5	---	6.65	ug/kg wet	1x	--	33.3	104%	(57-135)	--	--	04/23/09 21:08	
Aroclor 1260	"	35.2	---	6.65	"	"	--	"	106%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 94.8%*		*Limits: 16-149%*		*"*							*04/23/09 21:08*	

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040654 **Other wet Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040654-BLK1)									**Extracted: 04/17/09 10:00**					
Acenaphthene	EPA 8270C	ND	---	0.328	mg/kg	1x	--	--	--	--	--	--	04/17/09 21:41	
Acenaphthylene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Benzoic Acid	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Benzyl alcohol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
4-Bromophenyl phenyl ether	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Butyl benzyl phthalate	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
4-Chloro-3-methylphenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
4-Chloroaniline	"	ND	---	1.99	"	"	--	--	--	--	--	--	"	
Bis(2-chloroethoxy)methane	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Bis(2-chloroethyl)ether	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Bis(2-chloroisopropyl)ether	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2-Chloronaphthalene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2-Chlorophenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
4-Chlorophenyl phenyl ether	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Dibenzofuran	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
1,2-Dichlorobenzene	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
1,3-Dichlorobenzene	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
1,4-Dichlorobenzene	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
3,3´-Dichlorobenzidine	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
2,4-Dichlorophenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2,4-Dimethylphenol	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
4,6-Dinitro-2-methylphenol	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
2,4-Dinitrophenol	"	ND	---	1.99	"	"	--	--	--	--	--	--	"	
2,4-Dinitrotoluene	"	ND	---	0.497	"	"	--	--	--	--	--	--	"	
2,6-Dinitrotoluene	"	ND	---	0.497	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	0.746	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	

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Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040654 **Other wet Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040654-BLK1)								**Extracted: 04/17/09 10:00**						
Fluorene	EPA 8270C	ND	---	0.328	mg/kg	1x	--	--	--	--	--	--	04/17/09 21:41	
Hexachlorobenzene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Hexachlorobutadiene	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Hexachlorocyclopentadiene	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Hexachloroethane	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Isophorone	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2-Methylnaphthalene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2-Methylphenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
3-,4-Methylphenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2-Nitroaniline	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
3-Nitroaniline	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
4-Nitroaniline	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Nitrobenzene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2-Nitrophenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
4-Nitrophenol	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
N-Nitrosodi-n-propylamine	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
N-Nitrosodiphenylamine	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Pentachlorophenol	"	ND	---	0.995	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Phenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
1,2,4-Trichlorobenzene	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2,4,5-Trichlorophenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	
2,4,6-Trichlorophenol	"	ND	---	0.328	"	"	--	--	--	--	--	--	"	

Surrogate(s):	*2-Fluorobiphenyl*	*Recovery:*	*105%*	*Limits: 20-150%*	*"*	*04/17/09 21:41*
	2-Fluorophenol		*110%*	*10-150%*	*"*	*"*
	Nitrobenzene-d5		*93.7%*	*20-150%*	*"*	*"*
	Phenol-d6		*98.3%*	*10-150%*	*"*	*"*
	p-Terphenyl-d14		*105%*	*20-150%*	*"*	*"*
	2,4,6-Tribromophenol		*93.8%*	*10-150%*	*"*	*"*

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Semivolatile Organic Compounds per EPA Method 8270C - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040654 **Other wet Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9040654-BS1)								**Extracted: 04/17/09 10:00**						MNR
Acenaphthene	EPA 8270C	1.41	---	0.328	mg/kg	1x	--	1.66	84.8%	(20-150)	--	--	04/17/09 20:57	
4-Chloro-3-methylphenol	"	1.44	---	0.328	"	"	--	"	86.9%	"	--	--	"	
2-Chlorophenol	"	1.43	---	0.328	"	"	--	"	86.1%	"	--	--	"	
1,4-Dichlorobenzene	"	1.34	---	0.994	"	"	--	"	80.6%	"	--	--	"	
2,4-Dinitrotoluene	"	1.64	---	0.497	"	"	--	"	98.8%	"	--	--	"	
4-Nitrophenol	"	1.19	---	0.994	"	"	--	"	71.5%	"	--	--	"	
N-Nitrosodi-n-propylamine	"	1.42	---	0.328	"	"	--	"	85.4%	"	--	--	"	
Pentachlorophenol	"	0.986	---	0.994	"	"	--	"	59.5%	"	--	--	"	
Phenol	"	1.37	---	0.328	"	"	--	"	82.8%	"	--	--	"	
Pyrene	"	1.52	---	0.328	"	"	--	"	91.4%	"	--	--	"	
1,2,4-Trichlorobenzene	"	1.46	---	0.328	"	"	--	"	88.1%	"	--	--	"	

Surrogate(s):	*2-Fluorobiphenyl*	*Recovery:*	*94.7%*	*Limits: 20-150%*	*"*	*04/17/09 20:57*
	2-Fluorophenol		*103%*	*10-150%*	*"*	*"*
	Nitrobenzene-d5		*90.8%*	*20-150%*	*"*	*"*
	Phenol-d6		*99.2%*	*10-150%*	*"*	*"*
	p-Terphenyl-d14		*108%*	*20-150%*	*"*	*"*
	2,4,6-Tribromophenol		*108%*	*10-150%*	*"*	*"*

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GeoPro Geologic Services	Project Name: **Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number: 080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager: Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040656 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040656-BLK1)								Extracted: 04/17/09 18:30						
2-Methylnaphthalene	EPA 8270m	ND	---	13.4	ug/kg wet	1x	--	--	--	--	--	--	04/21/09 14:43	
Acenaphthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Acenaphthylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 116%*		*Limits: 24-125%*		*"*							*04/21/09 14:43*	
Pyrene-d10		*111%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*111%*		*38-143%*		*"*							*"*	
LCS (9040656-BS1)								Extracted: 04/17/09 18:30						MNR
Acenaphthene	EPA 8270m	174	---	13.4	ug/kg wet	1x	--	166	105%	(33-139)	--	--	04/21/09 14:11	
Benzo (a) pyrene	"	162	---	13.4	"	"	--	"	97.5%	(45-149)	--	--	"	
Pyrene	"	153	---	13.4	"	"	--	"	92.3%	(39-138)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 122%*		*Limits: 24-125%*		*"*							*04/21/09 14:11*	
Pyrene-d10		*115%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*121%*		*38-143%*		*"*							*"*	

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040881 Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040881-BLK1)										Extracted: 04/23/09 14:30				
2-Methylnaphthalene	EPA 8270m	ND	---	13.4	ug/kg wet	1x	--	--	--	--	--	--	04/23/09 23:37	
Acenaphthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Acenaphthylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 100%*		*Limits: 24-125%*		*"*							*04/23/09 23:37*	
Pyrene-d10		*87.7%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*91.2%*		*38-143%*		*"*							*"*	
LCS (9040881-BS1)										Extracted: 04/23/09 14:30				
Acenaphthene	EPA 8270m	160	---	13.4	ug/kg wet	1x	--	166	96.3%	(33-139)	--	--	04/23/09 22:33	
Benzo (a) pyrene	"	144	---	13.4	"	"	--	"	86.9%	(45-149)	--	--	"	
Pyrene	"	136	---	13.4	"	"	--	"	81.8%	(39-138)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 102%*		*Limits: 24-125%*		*"*							*04/23/09 22:33*	
Pyrene-d10		*87.6%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*94.0%*		*38-143%*		*"*							*"*	
LCS Dup (9040881-BSD1)										Extracted: 04/23/09 14:30				
Acenaphthene	EPA 8270m	157	---	13.4	ug/kg wet	1x	--	166	94.4%	(33-139)	2.04%	(60)	04/23/09 23:05	
Benzo (a) pyrene	"	145	---	13.4	"	"	--	"	87.1%	(45-149)	0.260%	"	"	
Pyrene	"	138	---	13.4	"	"	--	"	83.0%	(39-138)	1.40%	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 100%*		*Limits: 24-125%*		*"*							*04/23/09 23:05*	
Pyrene-d10		*87.5%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*93.1%*		*38-143%*		*"*							*"*	

TestAmerica Portland

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040881 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (9040881-MS1)				QC Source: PSD0783-01				Extracted: 04/23/09 14:30						
Acenaphthene	EPA 8270m	164	---	76.7	ug/kg dry	5x	ND	191	86.0%	(33-139)	--	--	04/24/09 00:09	
Benzo (a) pyrene	"	151	---	76.7	"	"	ND	"	79.1%	(45-149)	--	--	"	
Pyrene	"	143	---	76.7	"	"	ND	"	75.1%	(39-138)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 87.7%*		*Limits: 24-125%*		*"*							*04/24/09 00:09*	
Pyrene-d10		*77.6%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*83.6%*		*38-143%*		*"*							*"*	
Matrix Spike Dup (9040881-MSD1)				QC Source: PSD0783-01				Extracted: 04/23/09 14:30						
Acenaphthene	EPA 8270m	164	---	77.4	ug/kg dry	5x	ND	193	85.1%	(33-139)	0.142%	(60)	04/24/09 00:41	
Benzo (a) pyrene	"	151	---	77.4	"	"	ND	"	78.4%	(45-149)	0.00007	"	"	
Pyrene	"	143	---	77.4	"	"	ND	"	74.1%	(39-138)	0.404%	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 89.8%*		*Limits: 24-125%*		*"*							*04/24/09 00:41*	
Pyrene-d10		*78.1%*		*41-141%*		*"*							*"*	
Benzo (a) pyrene-d12		*83.6%*		*38-143%*		*"*							*"*	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040656 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040656-BLK1)								**Extracted: 04/17/09 18:30**						
Dimethyl phthalate	EPA 8270m	ND	---	26.8	ug/kg wet	1x	--	--	--	--	--	--	04/22/09 14:19	
Diethyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Butyl benzyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	N1
Di-n-octyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		*Recovery:*	*93.9%*		*Limits: 10-150%*	*10x*							*04/22/09 17:22*	
p-Terphenyl-d14			*112%*		*10-150%*	*"*							*"*	
LCS (9040656-BS1)								**Extracted: 04/17/09 18:30**						MNR
Dimethyl phthalate	EPA 8270m	103	---	80.1	ug/kg wet	3x	--	133	77.4%	(20-150)	--	--	04/23/09 21:21	
Diethyl phthalate	"	104	---	80.1	"	"	--	"	77.9%	"	--	--	"	
Di-n-butyl phthalate	"	110	---	80.1	"	"	--	"	83.2%	"	--	--	"	
Butyl benzyl phthalate	"	115	---	80.1	"	"	--	"	86.7%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	127	---	80.1	"	"	--	"	95.8%	"	--	--	"	B
Di-n-octyl phthalate	"	103	---	80.1	"	"	--	"	77.6%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		*Recovery:*	*80.1%*		*Limits: 10-150%*	*"*							*04/23/09 21:21*	
p-Terphenyl-d14			*81.2%*		*10-150%*	*"*							*"*	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Percent Dry Weight (Solids) per Standard Methods - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040526 **Soil Preparation Method: Dry Weight**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9040526-DUP1)				**QC Source: PSD0384-01**				**Extracted: 04/14/09 13:48**						
% Solids	NCA SOP	88.9	---	0.0100	% by Weight	1x	87.1	--	--	--	2.05%	(20)	04/14/09 13:48	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Tacoma

QC Batch: 42885 **Soil Preparation Method: NA**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (133401S)				**QC Source: PSD0394-01**				**Extracted: 04/22/09 10:05**						
Total Organic Carbon	9060	167000	---	2000	mg/Kg	1x	140000	19700	119%	(76-128)	--	--	04/22/09 10:05	4
Duplicate (133401X)				**QC Source: PSD0394-01**				**Extracted: 04/22/09 10:05**						
Total Organic Carbon	9060	93000	---	2000	mg/Kg	1x	140000	--	--	--	43%	(50)	04/22/09 10:05	
Blank (580-42885-1)				**QC Source:**				**Extracted: 04/22/09 10:05**						
Total Organic Carbon	9060	ND	---	2000	mg/Kg	1x	--	--	--	--	--	--	04/22/09 10:05	
LCS (580-42885-2)				**QC Source:**				**Extracted: 04/22/09 10:05**						
Total Organic Carbon	9060	5100	---	2000	mg/Kg	1x	--	3400	150%	(13-187)	--	--	04/22/09 10:05	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Notes and Definitions

Report Specific Notes:

4	-	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
B	-	Analyte was detected in the associated Method Blank.
B1	-	Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.
M8	-	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
MHA	-	Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
MNR	-	No results were reported for the MS/MSD. The sample used for the MS/MSD required dilution due to the sample matrix. Because of this, the spike compounds were diluted below the detection limit.
N1	-	See case narrative.
RL1	-	Reporting limit raised due to sample matrix effects.
RL3	-	Reporting limit raised due to high concentrations of non-target analytes.
RL7	-	Sample required dilution due to high concentrations of target analyte.
Z3	-	The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
ZX	-	Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	05/01/09 14:55

Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

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11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave. Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave. Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
[illegible] Anchorage, AK [illegible]

CHAIN OF CUSTODY REPORT

Work Order #: PSD0394

CLIENT: GEOPRO LLC

REPORT TO: PO Box 26
ADDRESS: Battle Ground WA 98604

PHONE: 3606661465 ~~FAX:~~ geopro2@comcast.net

INVOICE TO: GeoPro LLC
PO Box 26
Battle Ground WA 98604

P.O. NUMBER:

PROJECT NAME: Calbag Metals Co.

PROJECT NUMBER: 080820-09-1

SAMPLED BY: R. Kent

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: ☒ 10 STD. ☐ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

Petroleum Hydrocarbon Analyses: ☐ 5 STD. ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	Metals 6020/7471A	PCB 8082	Pest 8081A	SOV 8270C	PAH 8270C-SIM	TOC Plumb 1981	PSEP 1986	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	CB-5-4-09	4/10/09 0855	X	X	X	X	X	X		S	4	CB-5	
2	CB-1-4-09	4/10/09 0940	X	X	X	X	X	X		S	4	CB-1	
3	CB-2-4-09	4/10/09 1015	X	X	X	X	X	X		S	3	CB-2	
4	CB-4-4-09	4/10/09 1055	X	X	X	X	X	X		S	4	CB-4	
5	CB-3-4-09	4/10/09 1215	X	X	X	X	X	X		S	4	CB-3	
6	CB-6-4-09	4/10/09 1250	X	X	X	X	X	X		S	1	CB-6	
7													
8													
9													
10													

RELEASED BY: PRINT NAME: Richard Kent FIRM: GeoPro LLC DATE: 4/10/09 TIME: 1345

RECEIVED BY: PRINT NAME: Peggy Seyffied FIRM: TAP DATE: 4/10/09 TIME: 1345

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 12.3

PAGE OF

TAL-1000(0408)

APPENDIX B
Sediment Sample Field Logs

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

SEDIMENT SAMPLE FIELD LOG (Catch Basin)

DAY/DATE: Friday, April 10, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Metals Co. Stormwater	PROJECT NO.: 080820-09-1
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: Fair Overcast Fog Rain Snow Temp.: <0 0-32 33-54 55-79 >80 Humidity %: <25 26-49 50-74 >75	Wind: Calm Light Moderate Strong Wind from: N NE E SE S SW W NW Precip.: None Mist Light Moderate Heavy

LOCATION: Catch Basin **CB-1**	**SAMPLE NUMBER: CB-1-4-09**
Time Sample Collected: 0940	☒ Composite ❑ Grab
Collection device: ☒ Scoop ❑ Corer ❑ Other	Sediment sample depth(s): 2.4 ft (in basket)
Depth to water: 2.1 ft ☒ Sheen	Sample Color: dk gray-blk
Sample texture: debris, metal scrap	Sample Odor: none

Sketch: ☐ Rectangular ☒ Round
Catch basin: 13" round (grate 2.3' square) by 3.5'deep (w/o basket); 3" thick sample in basket

Sample Collection Method:
Standing water, if any, was pumped or scooped from the top of the sediment, leaving a thin layer.
Moist or wet solids were sampled in a manner to retain form and structure.
Collection devices were made of stainless steel and decontaminated between sampling locations.
New latex gloves were used during sample collection.
If composite, an equal amount of material was collected from each corner and the center of the catch basin to total depth, then thoroughly mixed in a bowl, from which selected material was placed in appropriate sample containers.
Samples were placed in appropriate containers suitable for analyses requested prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest with blu-ice for transport to the laboratory.
Depths of material and water were measured with a disposable wooden dowel.
Filters, if present, were removed prior to sampling.
No confined space entry was performed.

Texture:
Sand – particles 0.06-2mm diam., gritty texture between fingers; loose, non-cohesive, non-plastic
Silt – particles 0.004-0.06mm diam., greasy, smooth, talc-like feel, non-plastic, non-cohesive
Clay – particles <0.004mm diam., forms dense, gummy surface, smears on finger
Non-plastic – 1/8th thread cannot be rolled; Low plasticity – 1/8th thread barely rolled; Med. plastic – easily roll 1/8th thread
Detritus – dead, unconsolidated organic material: sticks, wood, leaves, decayed coarse plant material
Muck – black, very fine, flocculant material composed of completely decomposed organic material

Analysis Requested: EPA 6020/7471A, 8082, 8081A, 8270C, 8270C-SIM, Plumb 1981, optional PSEP 1986.
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: contains basket (2.8' long); no potential sources of contamination were observed nearby

PRINT NAME: Richard Kent SIGNATURE: Richard C. Kent

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

SEDIMENT SAMPLE FIELD LOG (Catch Basin)

DAY/DATE: Friday, April 10, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Metals Co. Stormwater	PROJECT NO.: 080820-09-1
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: Fair <u>Overcast</u> Fog Rain Snow	Wind: <u>Calm</u> Light Moderate Strong
Temp.: <0 0-32 <u>33-54</u> 55-79 >80	Wind from: N NE E SE S SW W NW
Humidity %: <25 26-49 <u>50-74</u> >75	Precip.: None <u>Mist</u> Light Moderate Heavy

LOCATION: Catch Basin **CB-2**	**SAMPLE NUMBER: CB-2-4-09**
Time Sample Collected: 1015	☒ Composite ❑ Grab
Collection device: ☒ Scoop ❑ Corer ❑ Other	Sediment sample depth(s): 2.7 ft (in basket)
Depth to water: 2.15 ft ❑ Sheen	Sample Color: dk gray-blk
Sample texture: debris, metal scrap	Sample Odor: metallic

Sketch: ❑ Rectangular ☒ Round

13" Round (grate 2.3' square) x 2.8' deep (basket), 1" thick sediment in basket

Sample Collection Method:

Standing water, if any, was pumped or scooped from the top of the sediment, leaving a thin layer.
Moist or wet solids were sampled in a manner to retain form and structure.
Collection devices were made of stainless steel and decontaminated between sampling locations.
New latex gloves were used during sample collection.
If composite, an equal amount of material was collected from each corner and the center of the catch basin to total depth, then thoroughly mixed in a bowl, from which selected material was placed in appropriate sample containers.
Samples were placed in appropriate containers suitable for analyses requested prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest with blu-ice for transport to the laboratory.
Depths of material and water were measured with a disposable wooden dowel.
Filters, if present, were removed prior to sampling.
No confined space entry was performed.

Texture:

Sand – particles 0.06-2mm diam., gritty texture between fingers; loose, non-cohesive, non-plastic
Silt – particles 0.004-0.06mm diam., greasy, smooth, talc-like feel, non-plastic, non-cohesive
Clay – particles <0.004mm diam., forms dense, gummy surface, smears on finger
Non-plastic – 1/8th thread cannot be rolled; Low plasticity – 1/8th thread barely rolled; Med. plastic – easily roll 1/8th thread
Detritus – dead, unconsolidated organic material: sticks, wood, leaves, decayed coarse plant material
Muck – black, very fine, flocculant material composed of completely decomposed organic material

Analysis Requested: EPA 6020/7471A, 8082, 8081A, 8270C, 8270C-SIM, Plumb 1981, optional PSEP 1986.
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: contains basket (2.8' long); no potential sources of contamination were observed nearby

PRINT NAME: Richard Kent	SIGNATURE: Richard C. Kent

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

SEDIMENT SAMPLE FIELD LOG (Catch Basin)

DAY/DATE: Friday, April 10, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Metals Co. Stormwater	PROJECT NO.: 080820-09-1
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: Fair Overcast Fog Rain Snow Temp.: <0 0-32 33-54 55-79 >80 Humidity %: <25 26-49 50-74 >75	Wind: Calm Light Moderate Strong Wind from: N NE E SE S SW W NW Precip.: None Mist Light Moderate Heavy

LOCATION: Catch Basin **CB-3**	**SAMPLE NUMBER: CB-3-4-09**
Time Sample Collected: 1215	☒ Composite ❑ Grab
Collection device: ☒ Scoop ❑ Corer ❑ Other	Sediment sample depth(s): 2.3 ft
Depth to water: 0.4 ft ☒ Sheen	Sample Color: dk gray-blk
Sample texture: debris, metal scrap	Sample Odor: none

Sketch: ☒ Rectangular ❑ Round
2.3' square x 2.5' deep, 1" thick sediment on bottom

Sample Collection Method:

Standing water, if any, was pumped or scooped from the top of the sediment, leaving a thin layer.
Moist or wet solids were sampled in a manner to retain form and structure.
Collection devices were made of stainless steel and decontaminated between sampling locations.
New latex gloves were used during sample collection.
If composite, an equal amount of material was collected from each corner and the center of the catch basin to total depth, then thoroughly mixed in a bowl, from which selected material was placed in appropriate sample containers.
Samples were placed in appropriate containers suitable for analyses requested prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest with blu-ice for transport to the laboratory.
Depths of material and water were measured with a disposable wooden dowel.
Filters, if present, were removed prior to sampling.
No confined space entry was performed.

Texture:

Sand – particles 0.06-2mm diam., gritty texture between fingers; loose, non-cohesive, non-plastic
Silt – particles 0.004-0.06mm diam., greasy, smooth, talc-like feel, non-plastic, non-cohesive
Clay – particles <0.004mm diam., forms dense, gummy surface, smears on finger
Non-plastic – 1/8th thread cannot be rolled; Low plasticity – 1/8th thread barely rolled; Med. plastic – easily roll 1/8th thread
Detritus – dead, unconsolidated organic material: sticks, wood, leaves, decayed coarse plant material
Muck – black, very fine, flocculant material composed of completely decomposed organic material

Analysis Requested: EPA 6020/7471A, 8082, 8081A, 8270C, 8270C-SIM, Plumb 1981, optional PSEP 1986.
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: no basket; Madden Fabrication building approx. 15-ft NW; no potential sources of contamination were observed nearby

PRINT NAME: Richard Kent	SIGNATURE: Richard C. Kent

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

SEDIMENT SAMPLE FIELD LOG (Catch Basin)

DAY/DATE: Friday, April 10, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Metals Co. Stormwater	PROJECT NO.: 080820-09-1
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: Fair <u>Overcast</u> Fog Rain Snow Temp.: <0 0-32 <u>33-54</u> 55-79 >80 Humidity %: <25 26-49 <u>50-74</u> >75	Wind: <u>Calm</u> Light Moderate Strong Wind from: N NE E SE S SW W NW Precip.: None <u>Mist</u> Light Moderate Heavy

LOCATION: Catch Basin **CB-4**	**SAMPLE NUMBER: CB-4-4-09**
Time Sample Collected: 1055	☒ Composite ❑ Grab
Collection device: ☒ Scoop ❑ Corer ❑ Other	Sediment sample depth(s): 2.7 ft
Depth to water: 0.7 ft ☒Sheen	Sample Color: dk gray-blk
Sample texture: muck, metal scrap	Sample Odor: oily

Sketch: ❑ Rectangular ☒ Round
2.3’ diameter x 2.8’ deep, 1” sediment on bottom

Sample Collection Method:
Standing water, if any, was pumped or scooped from the top of the sediment, leaving a thin layer.
Moist or wet solids were sampled in a manner to retain form and structure.
Collection devices were made of stainless steel and decontaminated between sampling locations.
New latex gloves were used during sample collection.
If composite, an equal amount of material was collected from each corner and the center of the catch basin to total depth, then thoroughly mixed in a bowl, from which selected material was placed in appropriate sample containers.
Samples were placed in appropriate containers suitable for analyses requested prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest with blu-ice for transport to the laboratory.
Depths of material and water were measured with a disposable wooden dowel.
Filters, if present, were removed prior to sampling.
No confined space entry was performed.

Texture:
Sand – particles 0.06-2mm diam., gritty texture between fingers; loose, non-cohesive, non-plastic
Silt – particles 0.004-0.06mm diam., greasy, smooth, talc-like feel, non-plastic, non-cohesive
Clay – particles <0.004mm diam., forms dense, gummy surface, smears on finger
Non-plastic – 1/8th thread cannot be rolled; Low plasticity – 1/8th thread barely rolled; Med. plastic – easily roll 1/8th thread
Detritus – dead, unconsolidated organic material: sticks, wood, leaves, decayed coarse plant material
Muck – black, very fine, flocculant material composed of completely decomposed organic material

Analysis Requested: EPA 6020/7471A, 8082, 8081A, 8270C, 8270C-SIM, Plumb 1981, optional PSEP 1986.
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: no basket; adjacent to propane tank; forklift propane tank refill area; no potential sources of contamination were observed nearby

PRINT NAME: Richard Kent	SIGNATURE: Richard C. Kent

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Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

SEDIMENT SAMPLE FIELD LOG (Catch Basin)

DAY/DATE: Friday, April 10, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Metals Co. Stormwater	PROJECT NO.: 080820-09-1
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: Fair <u>Overcast</u> Fog Rain Snow Temp.: <0 0-32 <u>33-54</u> 55-79 >80 Humidity %: <25 26-49 <u>50-74</u> >75	Wind: <u>Calm</u> Light Moderate Strong Wind from: N NE E SE S SW W NW Precip.: None <u>Mist</u> Light Moderate Heavy

LOCATION: Catch Basin **CB-5**	**SAMPLE NUMBER: CB-5-4-09**
Time Sample Collected: 0855	☒ Composite ❑ Grab
Collection device: ☒ Scoop ❑ Corer ❑ Other	Sediment sample depth(s): 1.8 ft
Depth to water: 0.4 ft ☒ Sheen	Sample Color: dk gray-blk
Sample texture: debris, metal scrap	Sample Odor: oily

Sketch: ❑ Rectangular ☒ Round
13” round (grate 2.3’ square) by 2.77’deep (w/o basket); 2” thick sample in basket

Sample Collection Method:
Standing water, if any, was pumped or scooped from the top of the sediment, leaving a thin layer.
Moist or wet solids were sampled in a manner to retain form and structure.
Collection devices were made of stainless steel and decontaminated between sampling locations.
New latex gloves were used during sample collection.
If composite, an equal amount of material was collected from each corner and the center of the catch basin to total depth, then thoroughly mixed in a bowl, from which selected material was placed in appropriate sample containers.
Samples were placed in appropriate containers suitable for analyses requested prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest with blu-ice for transport to the laboratory.
Depths of material and water were measured with a disposable wooden dowel.
Filters, if present, were removed prior to sampling.
No confined space entry was performed.

Texture:
Sand – particles 0.06-2mm diam., gritty texture between fingers; loose, non-cohesive, non-plastic
Silt – particles 0.004-0.06mm diam., greasy, smooth, talc-like feel, non-plastic, non-cohesive
Clay – particles <0.004mm diam., forms dense, gummy surface, smears on finger
Non-plastic – 1/8th thread cannot be rolled; Low plasticity – 1/8th thread barely rolled; Med. plastic – easily roll 1/8th thread
Detritus – dead, unconsolidated organic material: sticks, wood, leaves, decayed coarse plant material
Muck – black, very fine, flocculant material composed of completely decomposed organic material

Analysis Requested: EPA 6020/7471A, 8082, 8081A, 8270C, 8270C-SIM, Plumb 1981, optional PSEP 1986.
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: contains basket (2.8’ long); no potential sources of contamination were observed nearby

PRINT NAME: Richard Kent	SIGNATURE: Richard C. Kent

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

SEDIMENT SAMPLE FIELD LOG (Catch Basin)

DAY/DATE: Friday, April 10, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Metals Co. Stormwater	PROJECT NO.: 080820-09-1
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: Fair <u>Overcast</u> Fog Rain Snow	Wind: <u>Calm</u> Light Moderate Strong
Temp.: <0 0-32 <u>33-54</u> 55-79 >80	Wind from: N NE E SE S SW W NW
Humidity %: <25 26-49 <u>50-74</u> >75	Precip.: None <u>Mist</u> Light Moderate Heavy

LOCATION: Catch Basin **CB-6**	**SAMPLE NUMBER: CB-6-4-09**
Time Sample Collected: 1250	☒ Composite ❑ Grab
Collection device: ☒ Scoop ❑ Corer ❑ Other	Sediment sample depth(s):
Depth to water: 0.8 ft ❑ Sheen	Sample Color: dk gray-blk
Sample texture: debris, metal scrap	Sample Odor: none

Sketch: ❑ Rectangular ☒ Round
2.3’ diameter x 2.8’ deep, 1” sediment on bottom

Sample Collection Method:
Standing water, if any, was pumped or scooped from the top of the sediment, leaving a thin layer.
Moist or wet solids were sampled in a manner to retain form and structure.
Collection devices were made of stainless steel and decontaminated between sampling locations.
New latex gloves were used during sample collection.
If composite, an equal amount of material was collected from each corner and the center of the catch basin to total depth, then thoroughly mixed in a bowl, from which selected material was placed in appropriate sample containers.
Samples were placed in appropriate containers suitable for analyses requested prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest with blu-ice for transport to the laboratory.
Depths of material and water were measured with a disposable wooden dowel.
Filters, if present, were removed prior to sampling.
No confined space entry was performed.

Texture:
Sand – particles 0.06-2mm diam., gritty texture between fingers; loose, non-cohesive, non-plastic
Silt – particles 0.004-0.06mm diam., greasy, smooth, talc-like feel, non-plastic, non-cohesive
Clay – particles <0.004mm diam., forms dense, gummy surface, smears on finger
Non-plastic – 1/8th thread cannot be rolled; Low plasticity – 1/8th thread barely rolled; Med. plastic – easily roll 1/8th thread
Detritus – dead, unconsolidated organic material: sticks, wood, leaves, decayed coarse plant material
Muck – black, very fine, flocculant material composed of completely decomposed organic material

Analysis Requested: EPA 6020/7471A, 8082, 8081A, 8270C, 8270C-SIM, Plumb 1981, optional PSEP 1986.
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: contains basket (2.8’ long); no potential sources of contamination were observed nearby

PRINT NAME: Richard Kent | SIGNATURE: Richard C. Kent

APPENDIX C
DEQ Appendix C Excel Spreadsheet Printout

APPENDIX D: CATCH BASIN DATA REPORTING AND SCREENING TABLE[1]

INSTRUCTIONS FOR USING THIS TEMPLATE:

This worksheet is protected so you cannot add or delete rows; you may only add data. If you did not analyze for a chemical within a group, fill in "NA" for Not Analyzed. If you did not analyze a whole group, leave it blank.

TO ADD DATA, fill in the columns to the right of the screening table. Label each column with the sample location (e.g., CB #1) and date of the sample. Detected compounds should be in bold text and compounds exceeding SLVs should be shaded. Include qualifiers. For undetected compounds, report them as being less than the method detection level (e.g., <0.5).

	Screening Value[1]	[Location and Date]	[Location and Date]	[Location and Date]	[Location and Date]
Units	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Metals/Inorganics					
Aluminum (pH 6.5 - 9.0)	--				
Antimony	64,000				
Arsenic	7,000				
Arsenic III	--				
Cadmium	1,000				
Chromium, total	111,000				
Chromium, hexavalent	--				
Copper	149,000				
Lead	17,000				
Manganese	1,100,000				
Mercury	70				
Methyl Mercury	--				
Nickel	48,600				
Selenium	2,000				
Silver	5,000				
Zinc	459,000				
Perchlorate	--				
Cyanide	--				
Butyltins					
Monobutyltin	--				
Dibutyltin	--				
Tributyltin	1,800				
Tetrabutyltin	--				
PCBs Aroclors					
Aroclor 1016	530				
Aroclor 1221	--				
Aroclor 1232	--				
Aroclor 1242	--				

	Screening Value[1]	[Location and Date]	[Location and Date]	[Location and Date]	[Location and Date]
Units	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1248	1,500				
Aroclor 1254	300				
Aroclor 1260	200				
Aroclor 1262	--				
Aroclor 1268	--				
Total PCBs	0.39				
PCB Congeners					
All 209 PCB congener target analytes					
3,3',4,4'-TCB	0.052				
3,4,4',5-TCB	0.017				
2,3,3',4,4'-PeCB	0.017				
2,3,4,4',5-PeCB	0.017				
2,3',4,4',5-PeCB	0.12				
2',3,4,4',5-PeCB	0.21				
3,3',4,4',5-PeCB	0.00005				
2,3,3',4,4',5'-HxCB	0.21				
2,3,3',4,4',5-HxCB	0.21				
2,3',4,4',5,5'-HxCB	0.21				
3,3',4,4',5,5'-HxCB	0.00021				
2,3,3',4,4',5,5'-HpCB	1.2				
Chlorinated Herbicides					
Dalapon	--				
Dicamba	--				
MCPA	--				
Dichlorprop	--				
2,4-D	--				
2,4,5-TP (Silvex)	--				
2,4,5-T	--				
2,4-DB	--				
Dinoseb	--				
MCPP	--				
Organochlorine Pesticides					
α - BHC	--				
β - BHC	--				
γ - BHC (Lindane)	4.99				
δ - BHC	--				
Heptachlor	10				
Heptachlor epoxide	16				
Aldrin	40				
Chlordane	0.37				
Endosulfan alpha-	--				
Endosulfan beta-	--				
Endosulfan sulfate	--				
DDE	0.33				
DDD	0.33				

	Screening Value[1]	[Location and Date]	[Location and Date]	[Location and Date]	[Location and Date]
Units	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
DDT	0.33				
DDT - total (DDE+DDD+DDT)	0.33				
Dieldrin	0.0081				
Endrin	207				
Endrin aldehyde	--				
Endrin ketone	--				
Methoxychlor	--				
Toxaphene	--				
oxy chlordane	--				
cis - nonachlor	--				
trans - nonachlor	--				
Volatile Organic Compounds					
1,1,1,2- Tetrachloroethane	--				
1,1,1- Trichloroethane (TCA)	--				
1,1,2,2- Tetrachloroethane	--				
1,1,2- Trichloroethane	--				
1,1- Dichloroethane	--				
1,2,3- Trichloropropane	--				
1,2- Dichloroethane (EDC)	--				
cis-1,2-Dichloroethlyene	--				
1,2- Dichloropropane	--				
1,2- Dibromoethane (EDB)	--				
2- Butanone (MEK)	--				
2- Chloroethyl Vinyl Ether	--				
2- Hexanone	--				
4- Methyl-2-Pentanone (MIBK)	--				
Acetone	--				
Acrolein	--				
Acrylonitrile	--				
Bromochloromethane	--				
Bromodichloromethane	--				
Bromoform	--				
Bromomethane	--				
Carbon Disulfide	--				
Carbon Tetrachloride	--				
Chlorobenzene	--				
Chlorodibromomethane	--				
Chloroethane	--				
Chloroform	--				
Chloromethane	--				
cis-1,2-dichloroethylene	--				
cis-1,3-Dichloropropene	--				
Dibromomethane	--				
Dichlorodifluoromethane	--				
Iodomethane (Methyl Iodide)	--				
Isopropylbenzene	--				
Methylene chloride	--				

	Screening Value[1]	[Location and Date]	[Location and Date]	[Location and Date]	[Location and Date]
Units	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Styrene	--				
trans-1,4-Dichloro-2-butene	--				
Trichlorofluoromethane	--				
Vinyl Acetate	--				
Benzene	--				
EthylBenzene	--				
m,p-Xylene	--				
o-Xylene	--				
Xylenes (total)	--				
Methyltert-butyl ether	--				
Tetrachloroethene (PCE)	500				
Toluene	--				
trans-1,2-Dichloroethene	--				
trans-1,3-Dichloropropene	--				
Trichloroethene (TCE)	2,100				
Vinyl Chloride	--				
Semivolatile Organic Compounds					
Halogenated Compounds					
1,2-Dichlorobenzene	1,700				
1,3-Dichlorobenzene	300				
1,4-Dichlorobenzene	300				
1,2,4-Trichlorobenzene	9,200				
Hexachlorobenzene	19				
2-Chloronaphthalene	--				
Hexachloroethane	--				
Hexachlorobutadiene	600				
Hexachlorocyclopentadiene	400				
2,2'-oxybis(1-chloropropane)	--				
Bis-(2-chloroethoxy) methane	--				
Bis-(2-chloroethyl) ether	--				
4-Chlorophenyl-phenyl ether	--				
4-bromophenyl-phenyl ether	--				
3,3'-Dichlorobenzidine	--				
4-Chloroaniline	--				
Organonitrogen Compounds					
Nitrobenzene	--				
Aniline	--				
2-Nitroaniline	--				
3-Nitroaniline	--				
4-Nitroaniline	--				
N-Nitrosodimethylamine	--				
N-Nitroso-di-n-propylamine	--				
N-Nitrosodiphenylamine	--				
2,4-Dinitrotoluene	--				
2,6-Dinitrotoluene	--				

	Screening Value[1]	[Location and Date]	[Location and Date]	[Location and Date]	[Location and Date]
Units	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Carbazole	1,600				
Oxygen-Containing Compounds					
Benzoic Acid	--				
Benzyl Alcohol	--				
Dibenzofuran	--				
Isophorone	--				
Phenols and Substituted Phenols					
Phenol	50				
2-Methylphenol (o-Cresol)	--				
4-Methylphenol (p-Cresol)	--				
2,4-Dimethylphenol	--				
2-Chlorophenol	--				
2,4-Dichlorophenol	--				
2,4,5-Trichlorophenol	--				
2,4,6-trichlorophenol	--				
2,3,4,6-Tetrachlorophenol	--				
Pentachlorophenol	250				
4-Chloro-3-methylphenol	--				
2-Nitrophenol	--				
4-Nitrophenol	--				
2,4-Dinitrophenol	--				
Methyl-4,6-Dinitrophenol 2-	--				
Phthalate Esters					
Dimethylphthalate	--				
Diethylphthalate	600				
Di-n-butylphthalate	60				
Butylbenzylphthalate	--				
Di-n-octylphthalate	--				
bis(2-Ethylhexyl)phthalate	330				
Polycyclic Aromatic Hydrocarbons					
Naphthalene	561				
2-Methylnaphthalene	200				
Acenaphthylene	200				
Acenaphthene	300				
Fluorene	536				
Phenanthrene	1,170				
Anthracene	845				
Fluoranthene	2,230				
Pyrene	1,520				
Benzo(a)anthracene	1,050				
Chrysene	1,290				
Benzo(b)fluoranthene	--				
Benzo(k)fluoranthene	13,000				
Benzo(a)pyrene	1,450				

	Screening Value[1]	[Location and Date]	[Location and Date]	[Location and Date]	[Location and Date]
Units	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Indeno(1,2,3-cd)pyrene	100				
Dibenz(a,h)anthracene	1,300				
Benzo(g,h,i)perylene	300				
Chlorinated Dioxins and Furans					
2,3,7,8,-TCDD (Toxicity Equivalence Quotient)	--				
2,3,7,8,-TCDD	0.0000091				
2,3,7,8,-TCDF	0.00077				
1,2,3,7,8,-PeCDD	0.0026				
1,2,3,7,8,-PeCDF	0.0026				
2,3,4,7,8,-PeCDF	0.00003				
2,3,4,7,8,-PeCDF	--				
1,2,3,6,7,8,-HxCDD	--				
1,2,3,7,8,9,-HxCDD	--				
1,2,3,4,7,8,-HxCDF	0.0027				
1,2,3,6,7,8,-HxCDF	0.0027				
1,2,3,7,8,9,-HxCDF	0.0027				
2,3,4,6,7,8,-HxCDF	0.0027				
1,2,3,4,6,7,8,-HpCDD	0.69				
1,2,3,4,6,7,8,-HpCDF	0.69				
1,2,3,4,7,8,9,-HpCDF	0.69				
OCDD	23				
OCDF	23				
Total tetrachlorinated dioxins	--				
Total pentachlorinated dioxins	--				
Total hexachlorinated dioxins	--				
Total heptachlorinated dioxins	--				
Total tetrachlorinated furans	--				
Total pentachlorinated furans	--				
Total hexachlorinated furans	--				
Total heptachlorinated furans	--				
Not on Table 3-1					
TPH Diesel	--				
TPH Heavy Oil	--				
TPH-Gx	--				
Total Organic Carbon	--				
Total Solids	--				

[1]The source of each SLV is documented in Table 3.1 of the Portland Harbor Joint Source Control Strategy, which can be viewed at http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/docs/JSCSFinalTable03_1.pdf

Appendix F

Sediment Sampling PCBs: Roofs and NW 25th Ave.

Letter Report

2495 NW Nicolai Street, August 2009

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

August 19, 2009

RE: Sediment Sampling for PCBs
Roofs and NW 25th Ave.

Mr. Chuck Gleason
Calbag Metals Company
2495 NW Nicolai St.
Portland, OR 97210

Dear Chuck:

Per your request, an investigation was made to sample sediment on the roofs of 2485 NW Nicolai St. and sediment between 'cobblestone' bricks in NW 25th Ave., and, analyze the samples for PCBs (polychlorinated biphenyls). The sediment samples were collected on July 17, 2009.

1 PURPOSE

The purpose of the investigation is to determine whether sediments entering the stormwater system are potentially the source of PCBs (contaminants of concern) detected in previous stormwater catch basin sediment samples. Sample locations were selected to identify possible airborne sources that may deposit on the roofs, and sediment that may eventually be deposited in catch basin CB-5, located in NW 25th Avenue.

The objectives included sampling of sediment to attempt and identify potential stormwater discharges from the Site that could pose an unacceptable risk through transport of hazardous substances to the Willamette River. The Willamette River was listed as "impaired" under Clean Water Act § 303 (d) in 1996, requiring the DEQ to develop a water quality improvement plan.

Exceedances of storm water or catch basin screening level values may require implementation of readily implementable BMPs (Best Management Practices) or additional investigation and evaluation. BMPs should be applied with the goal of preventing contaminants from entering the storm water system and of ensuring proper maintenance of that system to improve its effectiveness.[1]

[1] DEQ Portland Harbor Joint Source Control Strategy Guidance Document

1.1 LOCATION

The sediment sampling sites consisted of three adjoining roofs and areas between mortared bricks ("cobblestones") exposed through eroded asphalt in NW 25th Ave. Roof access was gained through ladders from the interior of the building to the roof on which sample R-1 was obtained. Access onto NW 25th Avenue is through a gated entrance from NW Nicolai Street.

NW 25th Avenue, sometimes referred to as an "alley", is a City of Portland right-of-way which previously led to an uncontrolled city dump site known as Guilds Lake Landfill and Incinerator. The dump site is part of the Guilds Lake Remediation Project owned and managed by the City of Portland. The Guilds Lake site has been remediated of previous known hazardous substances which contaminated the soil, although long term methane and groundwater monitoring is ongoing. The cobblestones in NW 25th Avenue were paved with asphalt prior to purchase of the property in 1948 by Calbag. There is no indication that current or historical scrap products handled by Calbag could be PCB sources.

Calbag is independently investigating potential PCB contamination within NW 25th Avenue only to have continued operational use of NW 25th Avenue which provides critical access to recycling operations.

2 PCBs BACKGROUND

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include:

- Transformers and capacitors
- Other electrical equipment including voltage regulators, switches, reclosers, bushings, and electromagnets
- Oil used in motors and hydraulic systems
- Old electrical devices or appliances containing PCB capacitors
- Fluorescent light ballasts
- Cable insulation
- Thermal insulation material including fiberglass, felt, foam, and cork
- Adhesives and tapes
- Oil-based paint
- Caulking
- Plastics
- Carbonless copy paper
- Floor finish

The PCBs used in these products were chemical mixtures made up of a variety of individual chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is Aroclor.

Aroclor is a PCB mixture produced from approximately 1930 to 1979. It is one of the most commonly known trade names for PCB mixtures. There are many types of Aroclors and each has a distinguishing suffix number that indicates the degree of chlorination. The numbering standard for the different Aroclors is as follows: The first two digits generally refer to the number of carbon atoms in the phenyl rings (for PCBs this is 12), the second two numbers indicate the percentage of chlorine by mass in the mixture. For example, the name Aroclor 1254 means that the mixture contains approximately 54% chlorine by weight.[2]

2.1 PREVIOUS SAMPLING OF CATCH BASINS

Discrete sediment samples were collected on April 10, 2009 from six catch basins on the property and analyzed for metals, PCBs, pesticides, semivolatiles, phthalates, dry weights, PAHs, and TOC. The analytical results were screened against the Oregon Department of Environmental Quality (DEQ) Portland Harbor Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s). The JSCS represents several agencies, including DEQ and EPA, with the goal to identify, evaluate and prioritize upland sources of contamination that are affecting or may affect the Willamette River in the Portland Harbor area. Screening objectives and prioritization methods in the JSCS are planned to be consistent with EPA's schedule and goals for cleaning up contaminants in the Willamette River and its sediments.

PCBs were not detected in the catch basin sediment samples, except Aroclor 1242. Aroclor 1242 was detected in all samples except catch basin sample CB-4. The highest detection of Aroclor 1242 was 11.7 mg/kg (milligrams per kilogram) in sample CB-5, collected in a catch basin located in the northern part of NW 25th Avenue. Aroclor 1242, 1221 and 1232 do not have JSCS Screening criteria.

The detection limits for all PCBs, except Aroclor 1248 in catch basin samples CB-1, CB-5 and CB-6, exceeded the DEQ JSCS screening criteria. It was concluded that there is no apparent pattern based on the analyses that would identify likely sources of PCBs.

[2] Background information on PCBs from EPA internet web sites.

The following Table 1 is a summary of PCB analysis on samples collected from the catch basins in April 2009. Catch basin locations are shown in Figure 3.

CHEMICAL	DEQ JSCS CRITERIA	CB-1	CB-2	CB-3	CB-4	CB-5	CB-6
Polychlorinated Biphenyls- Method 8082 (ug/kg dry)							
Aroclor 1016	530	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1221	na	<2310	<5530	<2880	<8660	<2190	<2880
Aroclor 1232	na	<1150	<2750	<1430	<4310	<1450	<1430
Aroclor 1242	na	2320	933	969	<861	11700	747
Aroclor 1248	1500	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1254	300	<1150	<2750	<3080	<4310	<1450	<1430
Aroclor 1260	200	<1150	<2750	<3080	<4310	<2170	<1430

Table 1 –Catch Basin Sediment Sample Analyses

DEQ's Risk-Based Concentration (RBC) screening levels are cleanup levels above which remedial action is necessary. The RBCs for soil are based on a 10^{-6} cancer risk and standard default exposure values. For occupational-use the RBC soil level is 0.98 mg/kg (980 µg/kg) *total* PCBs[3].

3 SEDIMENT SAMPLING PROCEDURES

Roof sediment samples were collected using a modified procedure based on the EPA document "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup" (EPA-560/5-86-017, May 1986). Modified procedures included no grid sampling and no cleanup criteria basis for sample locales. Sample locations were selected on a random basis (see Figure 1).

Roof samples were taken by wipe sampling (sometimes referred to as swipe sampling). Four discrete wipe samples were collected from the roofs at locations where sediment had collected in depressions on the roofs. The samples were taken by first applying a hexane solvent (provided by the laboratory) to a new sterile gauze pad. The moistened gauze pad was rubbed thoroughly over a lOO-cm^2 area (delineated by a template) of the sample surface to obtain the sample. The pad was then placed in a precleaned 4 ounce sample jar with Teflon-lined caps furnished by the laboratory, labeled, and placed in an ice chest (to keep the sample at about 4°C). The sample collection data was entered into the field logs (see Appendix B) and on the chain-of-custody form (see Appendix A). Disposable latex gloves were worn when taking wipe samples.

[3] DEQ Risk Based Decision Making document Oct. 2008

Roadway composite sediment samples were collected using a scraping technique with dedicated stainless steel trowels. Samples were collected by loosening the sediment which had collected on top of the mortar between the bricks. The areas scraped were variable, depending upon the amount of sediment. Due to the low amount of sediment available between the bricks exposed within eroded asphalt areas, the 4 ounce sample jars were filled to approximately one-half, except sample jar S-1, which was filled completely for laboratory splits. The roadway sediment samples were placed in precleaned 4 ounce sample jars with Teflon-lined caps furnished by the laboratory, labeled, and placed in an ice chest (to keep the sample at about 4°C). The sample collection data was entered into the field logs (see Appendix B) and on the chain-of-custody form (see Appendix A). Disposable latex gloves were worn when taking roadway samples.

4 LABORATORY ANALYSIS

All sediment samples were submitted to OnSite Environmental Inc., Redmond, Washington, for analysis of PCBs. Onsite subsequently equally split sample S-1 and submitted it to TestAmerica laboratory, Beaverton, Oregon. TestAmerica analyzed the sample S-1 split according to DEQ's JSCS detection limits while Onsite laboratory analyzed their S-1 split according to RBC detection limits.

All PCB analyses were completed using EPA Method 8082: Polychlorinated Biphenyls (PCBs) by Gas Chromatography.

4.1 SUMMARY OF RESULTS

The following Table 2 is a summary of PCB analyses of the sediment samples collected on the roofs (R-1 through R-4) and within the roadway of NW 25th Avenue (S-1 through S-3). The laboratory QA/QC results are included in the laboratory reports (Appendix A).

CHEMICAL	EPA/DEQ CRITERIA[4]	DEQ JSCS CRITERIA[5]	R-1	R-2	R-3	R-4	S-1 Onsite	S-1 TestAmerica[6]	S-2	S-3
	ug/kg	*ug/kg*	*ug/ 100 cm²*	*ug/ 100 cm²*	*ug/ 100 cm²*	*ug/ 100 cm²*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*
Aroclor 1016	21,000	530	<2.0	<2.0	<2.0	<2.0	<510	<77	<520	<51
Aroclor 1221	620	na	<2.0	<2.0	<2.0	<2.0	<510	<190	<520	<51
Aroclor 1232	620	na	<2.0	<2.0	<2.0	<2.0	<510	<170	<520	<51
Aroclor 1242	740	na	<2.0	<2.0	<2.0	<2.0	**2,000**	<50	**2,300**	<51
Aroclor 1248	740	1500	<2.0	<2.0	<2.0	<2.0	<510	<31	<520	<51
Aroclor 1254	740	300	<2.0	<2.0	<2.0	<2.0	<510	**3,700**	<520	**200**
Aroclor 1260	740	200	<2.0	<2.0	<2.0	<2.0	**780**	<72	<520	<51

Notes: non-detected shown as less than practical quantitation limit (e.g., <2.0); na = no criteria; 100 cm2 = 10 centimeter by 10 centimeter template; sample S-1 was split between Onsite Environmental and TestAmerica labs.

Table 2 –Sediment Sample Analyses

5 CONCLUSIONS

PCBs were not detected in the samples taken from the roofs. PCBs were detected in all NW 25th Avenue sediment samples S-1, S-2 and S-3.

In sample S-1, Arolclor 1242 and 1260 exceeded the individual Aroclor EPA Human Health Screening Levels used by DEQ. In sample S-2, Aroclor 1242 exceeded the EPA Human Health Screening Levels used by DEQ. In sample S-3, Aroclor 1254 was detected, but below EPA Human Health Screening Levels used by DEQ. Both samples S-1 and S-2 exceeded DEQ's occupational-use RBC soil level of 980 µg/kg *total* PCBs. The split of sample S-1 analyzed by TestAmerica contained Aroclor 1254 above the Portland Harbor criteria. The variability in the S-1 results could be due to such factors as the natural variability within the sample or the splitting procedures used by the lab.

The analytical results indicate that surficial sediments trapped between the cobblestones of NW 25th Avenue are a likely source of PCBs.

[4] EPA Superfund Regional Human Health Screening Levels Sept. 2008; DEQ does not have individual Aroclor RBC values
[5] Portland Harbor Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) for stormwater pathway
[6] Method Detection Limit; Reporting Limits for all PCBs was 240 µg/kg.

6 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk. Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of previous work. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied.

It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Landowner and Client understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. Consultant is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services for the Client may or may not be disclosed in this report.

Richard C. Kent, R.G.
GeoPro Geologic Services LLC

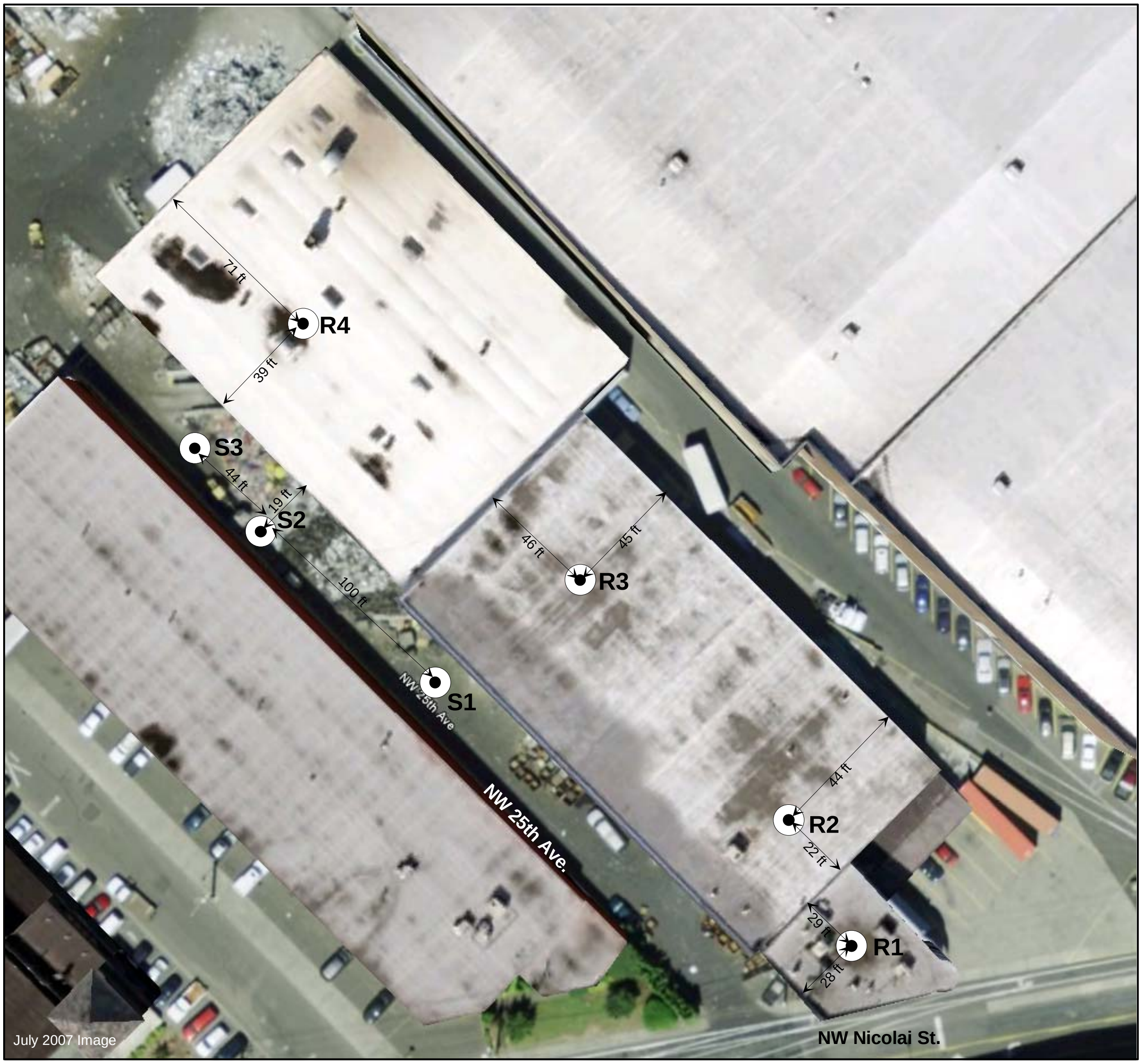

Figure 1 – Sediment Sample Locations

R-1 Roof

R-2 Roof

R-3 Roof

R-4 Roof

S-1 Roadway

S-2 Roadway

S-3 Roadway

July 17, 2009
GGS LLC

Figure 2 – Photographs: Sediment Sampling

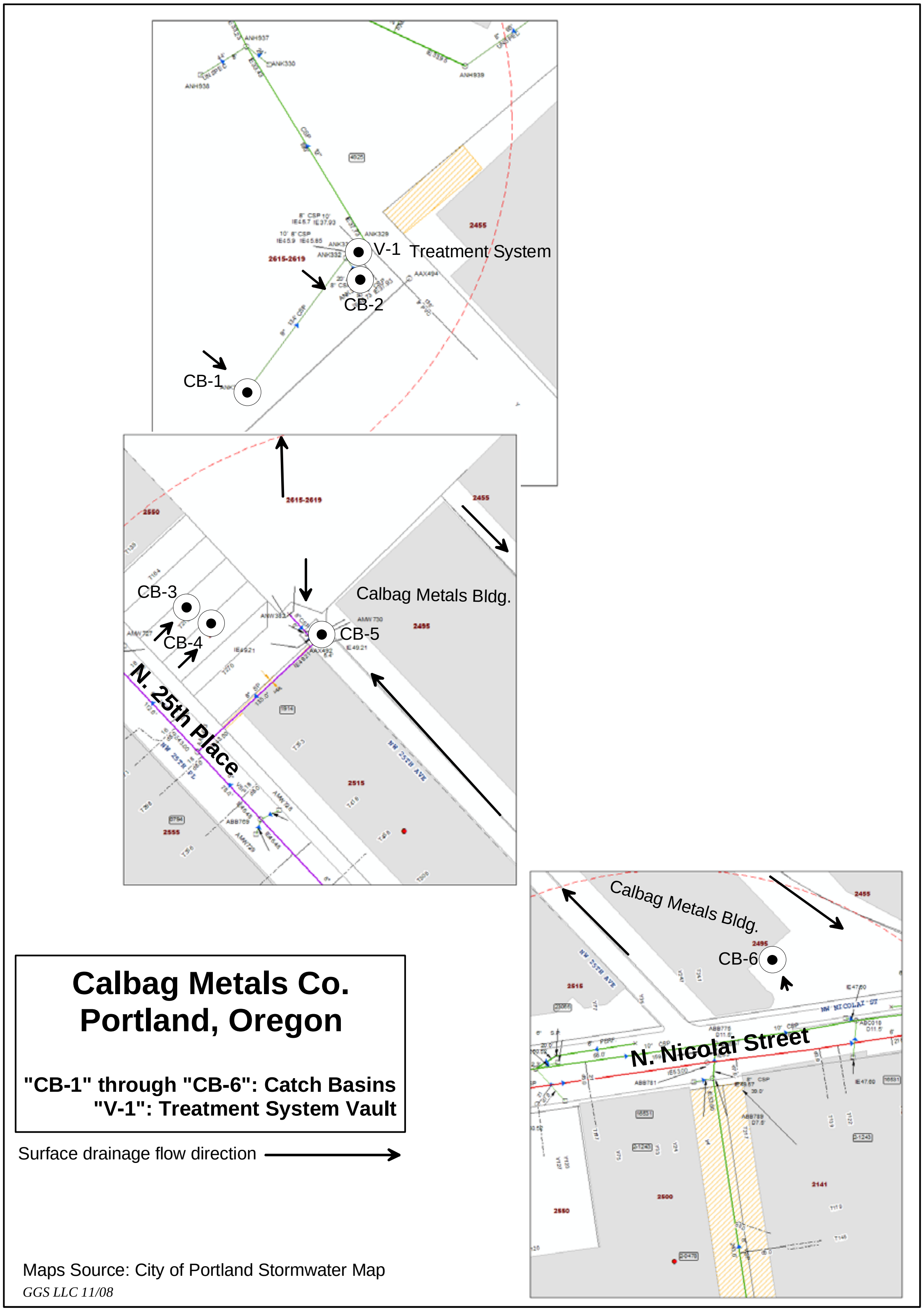

Figure 3 – Catch Basin Locations

APPENDIX A
LABORATORY REPORTS

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 30, 2009

Richard Kent
GeoPro, LLC
611 NW 5th Avenue
Battle Ground, WA 98604

Re: Analytical Data for Project 090709
Laboratory Reference No. 0907-149

Dear Richard:

Enclosed are the analytical results and associated quality control data for samples submitted on July 22, 2009.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Laboratory Reference: 0907-149
Project: 090709

Case Narrative

Samples were collected on July 17, 2009, and received by the laboratory on July 22, 2009. They were maintained at the laboratory at a temperature of 2^oC to 6^oC except as noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Lab Traveler: 0907-149
Project: 090709

PCBs by EPA 8082

Matrix: Wipe
Units: ug/100cm2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**R1**					
Laboratory ID:	07-149-01					
Aroclor 1016	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1221	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1232	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1242	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1248	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1254	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1260	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*104*	*68-125*				
Client ID:	**R2**					
Laboratory ID:	07-149-02					
Aroclor 1016	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1221	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1232	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1242	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1248	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1254	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1260	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*106*	*68-125*				
Client ID:	**R3**					
Laboratory ID:	07-149-03					
Aroclor 1016	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1221	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1232	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1242	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1248	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1254	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1260	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*113*	*68-125*				

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Lab Traveler: 0907-149
Project: 090709

PCBs by EPA 8082

Matrix: Wipe
Units: ug/100cm2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**R4**					
Laboratory ID:	07-149-04					
Aroclor 1016	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1221	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1232	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1242	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1248	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1254	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1260	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*114*	*68-125*				

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Lab Traveler: 0907-149
Project: 090709

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Wipe
Units: ug/100cm2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0723P1					
Aroclor 1016	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1221	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1232	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1242	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1248	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1254	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Aroclor 1260	**ND**	2.0	EPA 8082	7-23-09	7-23-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*116*	*68-125*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0723P1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**19.2**	**19.5**	20.0	20.0	N/A	**96**	**97**	86-120	2	5	
Surrogate:											
DCB						*116*	*117*	*68-125*			

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Lab Traveler: 0907-149
Project: 090709

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**S1**					
Laboratory ID:	07-149-05					
Aroclor 1016	**ND**	0.51	EPA 8082	7-23-09	7-24-09	
Aroclor 1221	**ND**	0.51	EPA 8082	7-23-09	7-24-09	
Aroclor 1232	**ND**	0.51	EPA 8082	7-23-09	7-24-09	
Aroclor 1242	**2.0**	0.51	EPA 8082	7-23-09	7-24-09	
Aroclor 1248	**ND**	0.51	EPA 8082	7-23-09	7-24-09	
Aroclor 1254	**ND**	0.51	EPA 8082	7-23-09	7-24-09	
Aroclor 1260	**0.78**	0.51	EPA 8082	7-23-09	7-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*37*	*33-122*				
Client ID:	**S2**					
Laboratory ID:	07-149-06					
Aroclor 1016	**ND**	0.52	EPA 8082	7-23-09	7-24-09	
Aroclor 1221	**ND**	0.52	EPA 8082	7-23-09	7-24-09	
Aroclor 1232	**ND**	0.52	EPA 8082	7-23-09	7-24-09	
Aroclor 1242	**2.3**	0.52	EPA 8082	7-23-09	7-24-09	
Aroclor 1248	**ND**	0.52	EPA 8082	7-23-09	7-24-09	
Aroclor 1254	**ND**	0.52	EPA 8082	7-23-09	7-24-09	
Aroclor 1260	**ND**	0.52	EPA 8082	7-23-09	7-24-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*46*	*33-122*				
Client ID:	**S3**					
Laboratory ID:	07-149-07					
Aroclor 1016	**ND**	0.051	EPA 8082	7-23-09	7-30-09	
Aroclor 1221	**ND**	0.051	EPA 8082	7-23-09	7-30-09	
Aroclor 1232	**ND**	0.051	EPA 8082	7-23-09	7-30-09	
Aroclor 1242	**ND**	0.051	EPA 8082	7-23-09	7-30-09	
Aroclor 1248	**ND**	0.051	EPA 8082	7-23-09	7-30-09	
Aroclor 1254	**0.20**	0.051	EPA 8082	7-23-09	7-30-09	
Aroclor 1260	**ND**	0.051	EPA 8082	7-23-09	7-30-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*37*	*33-122*				

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Lab Traveler: 0907-149
Project: 090709

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0723S1					
Aroclor 1016	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Aroclor 1221	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Aroclor 1232	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Aroclor 1242	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Aroclor 1248	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Aroclor 1254	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Aroclor 1260	**ND**	0.050	EPA 8082	7-23-09	7-23-09	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*94*	*33-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	07-157-01										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.300**	**0.325**	0.500	0.500	ND	**60**	**65**	24-125	8	18	
Surrogate:											
DCB						*73*	*75*	*33-122*			

Date of Report: July 30, 2009
Samples Submitted: July 22, 2009
Lab Traveler: 0907-149
Project: 090709

% MOISTURE

Date Analyzed: 7-23-09

Client ID	Lab ID	% Moisture
S1	07-149-05	1
S2	07-149-06	3
S3	07-149-07	1

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: GeoPro Geologic Services LLC
Project Number: 090709
Project Name: Calbag PCB Roof/Alley
Project Manager: Richard Kent
Sampled by: Pat/Cortland

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days) (TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 07-149

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH						% Moisture
1	R1	7/17/09	1150	S	1								X													
2	R2	7/17/09	1155	S	1								X													
3	R3	7/17/09	1205	S	1								X													
4	R4	7/17/09	1216	S	1								X													
5	S1 ** SEE COMMENTS **	7/17/09	1330	S	1								X													X
6	S2	7/17/09	1410	S	1								X													X
7	S3	7/17/09	1405	S	1								X													X

	Signature	Company	Date	Time
Relinquished by	[signature]	GeoPro LLC	7/24/09	11:00
Received by	[signature]	Onsite	7-22-09	1030
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

INVOICE GEOPRO LLC

SEE ATTACHED EMAIL:
SPLIT SAMPLE NUMBER S1 and SEND TO TESTAMERICA TO ANALYZE FOR PORTLAND HARBOR PCB SCREENING LEVELS (YOU WILL ANALYZE THE SPLIT FOR THE SAME PCBs BUT USING YOUR "NORMAL" 8082 MDL's).

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 580-14787-1

Job Description: 090709

For:
OnSite Environmental Inc
14648 NE 95th Street
Redmond, WA 98052

Attention: Mr. David Baumeister

Pamela R. Johnson

Approved for release.
Pam R Johnson
Project Mgmt. Assistant
8/19/2009 9:49 AM

Pam R Johnson
Project Mgmt. Assistant
pamr.johnson@testamericainc.com
08/19/2009

TestAmerica Tacoma is a part of TestAmerica Laboratories, Inc.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

TestAmerica Laboratories, Inc.
TestAmerica Tacoma 5755 8th Street East, Tacoma, WA 98424
Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

Job Narrative
580-J14787-1

Comments
No additional comments.

Receipt
The following sample was received outside of holding time: for PCBs

The following sample was received at the laboratory outside the required temperature criteria: 18.2C

All other samples were received in good condition within temperature requirements.

GC Semi VOA - Method 8082
Matrix spikes for extraction batch 580-48062 could not be recovered due to sample matrix interferences which required sample dilution. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

METHOD SUMMARY

Client: OnSite Environmental Inc — Job Number: 580-14787-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Polychlorinated Biphenyls (PCBs) by Gas Chromatography	TAL TAC	SW846 8082	
Ultrasonic Extraction	TAL TAC		SW846 3550B
Percent Moisture	TAL TAC	EPA Moisture	

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: OnSite Environmental Inc

Job Number: 580-14787-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-14787-1	S1	Solid	07/17/2009 1330	08/04/2009 1140

Analytical Data

Client: OnSite Environmental Inc | Job Number: 580-14787-1

Client Sample ID: S1

Lab Sample ID:	580-14787-1			Date Sampled:	07/17/2009 1330
Client Matrix:	Solid	% Moisture:	0.7	Date Received:	08/04/2009 1140

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method:	8082	Analysis Batch: 580-48409	Instrument ID:	TAC034
Preparation:	3550B	Prep Batch: 580-48062	Initial Weight/Volume:	10.4799 g
Dilution:	50		Final Weight/Volume:	5 mL
Date Analyzed:	08/18/2009 0504		Injection Volume:	1.0 uL
Date Prepared:	08/11/2009 1308		Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
PCB-1016		ND	H	77	240
PCB-1221		ND	H	190	240
PCB-1232		ND	H	170	240
PCB-1242		ND	H	50	240
PCB-1248		ND	H	31	240
PCB-1254		3700	H	50	240
PCB-1260		ND	H	72	240

Surrogate	%Rec	Qualifier	Acceptance Limits
Tetrachloro-m-xylene	0	X D	45 - 155
DCB Decachlorobiphenyl	0	X D	60 - 125

General Chemistry

Client Sample ID: S1

Lab Sample ID: 580-14787-1 Date Sampled: 07/17/2009 1330
Client Matrix: Solid Date Received: 08/04/2009 1140

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	99		%	0.10	0.10	1.0	Moisture
Analysis Batch: 580-47964	Date Analyzed: 08/10/2009 1048						DryWt Corrected: N
Percent Moisture	0.72		%	0.10	0.10	1.0	Moisture
Analysis Batch: 580-47964	Date Analyzed: 08/10/2009 1048						DryWt Corrected: N

DATA REPORTING QUALIFIERS

Client: OnSite Environmental Inc Job Number: 580-14787-1

Lab Section	Qualifier	Description
GC Semi VOA		
	F	MS or MSD exceeds the control limits
	H	Sample was prepped or analyzed beyond the specified holding time
	X	Surrogate exceeds the control limits
	D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

QUALITY CONTROL RESULTS

Client: OnSite Environmental Inc | Job Number: 580-14787-1

Method Blank - Batch: 580-48062

Method: 8082
Preparation: 3550B

Lab Sample ID: MB 580-48062/1-A	Analysis Batch: 580-48409	Instrument ID: TAC034	
Client Matrix: Solid	Prep Batch: 580-48062	Lab File ID: PCB23016.D	
Dilution: 1.0	Units: ug/Kg	Initial Weight/Volume: 10 g	
Date Analyzed: 08/17/2009 1816		Final Weight/Volume: 5 mL	
Date Prepared: 08/11/2009 1308		Injection Volume: 1.0 uL	
		Column ID: PRIMARY	

Analyte	Result	Qual	MDL	RL
PCB-1016	ND		1.6	5.0
PCB-1221	ND		4.0	5.0
PCB-1232	ND		3.5	5.0
PCB-1242	ND		1.0	5.0
PCB-1248	ND		0.65	5.0
PCB-1254	ND		1.0	5.0
PCB-1260	ND		1.5	5.0

Surrogate	% Rec	Acceptance Limits
Tetrachloro-m-xylene	111	45 - 155
DCB Decachlorobiphenyl	104	60 - 125

Lab Control Sample - Batch: 580-48062

Method: 8082
Preparation: 3550B

Lab Sample ID: LCS 580-48062/2-A	Analysis Batch: 580-48409	Instrument ID: TAC034
Client Matrix: Solid	Prep Batch: 580-48062	Lab File ID: PCB23017.D
Dilution: 1.0	Units: ug/Kg	Initial Weight/Volume: 10 g
Date Analyzed: 08/17/2009 1831		Final Weight/Volume: 5 mL
Date Prepared: 08/11/2009 1308		Injection Volume: 1.0 uL
		Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
PCB-1016	50.0	42.6	85	40 - 140	
PCB-1260	50.0	44.4	89	60 - 130	

Surrogate	% Rec	Acceptance Limits
Tetrachloro-m-xylene	106	45 - 155
DCB Decachlorobiphenyl	106	60 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: OnSite Environmental Inc   Job Number: 580-14787-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-48062

Method: 8082
Preparation: 3550B

MS Lab Sample ID:	580-14787-1	Analysis Batch:	580-48409	Instrument ID:	TAC034
Client Matrix:	Solid	Prep Batch:	580-48062	Lab File ID:	PCB23056.D
Dilution:	50			Initial Weight/Volume:	10.4116 g
Date Analyzed:	08/18/2009 0519			Final Weight/Volume:	5 mL
Date Prepared:	08/11/2009 1308			Injection Volume:	1.0 uL
				Column ID:	PRIMARY

MSD Lab Sample ID:	580-14787-1	Analysis Batch:	580-48409	Instrument ID:	TAC034
Client Matrix:	Solid	Prep Batch:	580-48062	Lab File ID:	PCB23057.D
Dilution:	50			Initial Weight/Volume:	10.0393 g
Date Analyzed:	08/18/2009 0535			Final Weight/Volume:	5 mL
Date Prepared:	08/11/2009 1308			Injection Volume:	1.0 uL
				Column ID:	PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
PCB-1016	0	0	40 - 140	NC	20	H F	H F
PCB-1260	0	0	60 - 130	NC	20	H F	H F

Surrogate	MS % Rec		MSD % Rec		Acceptance Limits
Tetrachloro-m-xylene	0	X D	0	X D	45 - 155
DCB Decachlorobiphenyl	0	X D	0	X D	60 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page 1 of 1

14787

Subcontract Laboratory: TEST AMERICA

Contact Person: KATIE DOWNIE

Address:

Phone Number:

Date/Time:

Turnaround Request:

1 Day 2 Day 3 Day

Standard

Other:

Laboratory Reference #: 07-149

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number:

Project Name: 090709

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
-1	S1	7/17/09	1330	S	1	PCBS - PORTLAND HARBOR SPECIFICATIONS.

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OSE	8/3/09	1530	
Received by:	UPS			
Relinquished by:				
Received by: Tom Blank	TA-Tac.	~~8/14/09~~ 8/4/09	11:40	
Relinquished by:	TB 8/10/09			
Received by:				

styro in box UPS Gr. 18.2 bubble gel-melted

Login Sample Receipt Check List

Client: OnSite Environmental Inc　　　　Job Number: 580-14787-1

Login Number: 14787　　　　**List Source: TestAmerica Tacoma**
Creator: Blankinship, Tom
List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Ice received melted
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	False	
Sample Preservation Verified	N/A	

APPENDIX B
SAMPLE FIELD LOGS

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER: R-1**
Time Sample Collected: 1150	
COC and RFA Number:	
Sample Location	
South roof, lower rooftop	
22 ft from SW edge, 29 ft from NW edge	
Sample Collection Method: swipe: gauze swab with hexane; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt	
Color: brown-gray 5YR3/2	**Odor**: none

Analysis Requested:

PCBs

Comments:

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER: R-2**
Time Sample Collected: 1155	
COC and RFA Number:	
Sample Location	
Middle roof; 22 ft from S edge, 44 ft from E edge	
Sample Collection Method: swipe: gauze swab with hexane; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt	
Color: brown-gray 5YR3/2	**Odor**: none

Analysis Requested:

PCBs

Comments:

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER: R-3**
Time Sample Collected: 1205	
COC and RFA Number:	
Sample Location	
Middle roof; 46 ft from N edge, 45 ft from E edge	
Sample Collection Method: swipe: gauze swab with hexane; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt	
Color: brown-gray 5YR3/2	**Odor**: none

Analysis Requested:

PCBs

Comments:

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER: R-4**
Time Sample Collected: 1216	
COC and RFA Number:	
Sample Location	
Lower N roof; 71 ft from N edge, 39 ft from W edge	
Sample Collection Method: swipe: gauze swab with hexane; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt	
Color: brown-gray 5YR3/2	**Odor**: none

Analysis Requested:

PCBs

Comments:

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER: S-1**
Time Sample Collected: 1330	
COC and RFA Number:	
Sample Location	
NW 25th Ave. (“alley” west of 24095 NW Nicolai St.)	
113 ft NW of MW-3	
Scrapes from between ‘cobblestone’ bricks previously overlain by asphalt	
Sample Collection Method: composite grab: dedicated stainless steel trowel; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt w/metal shavings	
Color: brown-gray 5YR3/2	**Odor**: musty, metallic

Analysis Requested:

PCBs

Comments:

Sample collected in general area where asphalt has worn away exposing cobblestones

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER: S-2**
Time Sample Collected: 1410	
COC and RFA Number:	
Sample Location	
NW 25th Ave. ("alley" west of 24095 NW Nicolai St.)	
100 ft NW of S-1	
Scrapes from between 'cobblestone' bricks previously overlain by asphalt	
Sample Collection Method: composite grab: dedicated stainless steel trowel; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt w/metal shavings	
Color: brown-gray 5YR3/2	**Odor**: musty, metallic

Analysis Requested:

PCBs

Comments:

Sample collected in general area where asphalt has worn away exposing cobblestones

GeoPro Geologic Services LLC
Post Office Box 26, Battle Ground, WA 98604
(360) 666-1465

SOIL SAMPLE FIELD LOG

Project Number: 090709

Project Name: Calbag PCB Roof/Alley

Project Location: 2495 NW Nicolai, Portland, OR

Client: Calbag Metals Co.

DATE: 7-17-09	**SAMPLE NUMBER:** **S-3**
Time Sample Collected: 1405	
COC and RFA Number:	
Sample Location	
NW 25th Ave. (“alley” west of 24095 NW Nicolai St.)	
44 ft NW of S-2	
Scrapes from between ‘cobblestone’ bricks previously overlain by asphalt	
Sample Collection Method: composite grab: dedicated stainless steel trowel; 4 oz sample jar	

Physical Characteristics:

USCS Classification: ML	
Lithology:	
fine silt w/metal shavings	
Color: brown-gray 5YR3/2	**Odor**: musty, metallic

Analysis Requested:

PCBs

Comments:

Sample collected in general area where asphalt has worn away exposing cobblestones

Appendix G

PCBs Sampling Asphalt and Soil Letter Report

2495 NW Nicolai Street, November 2009

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

November 9, 2009

RE: PCBs Sampling
Asphalt and Soil

Mr. Chuck Gleason
Calbag Metals Company
2495 NW Nicolai Street
Portland, OR 97210

Dear Chuck:

Per your request, an investigation was made to sample asphalt and soil in NW 25th Avenue and other areas of the property at 2495 NW Nicolai Street, Portland, Oregon, and analyze the samples for PCBs (polychlorinated biphenyls). The field investigation was conducted from October 2-9, 2009 pursuant to a Work Plan approved by the Oregon Department of Environmental Quality (DEQ).

1 BACKGROUND

1.1 Objectives

The following are specific objectives of the investigation:

1. Collect two soil samples each from three hand auger borings, "B-1", B-2" and "B-3".
2. Collect one large asphalt sample "AS-1" near the boring "B-2" location.
3. Collect surface asphalt samples from 0 to 0.25 inches at twelve (12) locations, "S-1" through "S-12".
4. Analyze each soil and asphalt sample for PCBs.
5. Screen the analytical results against Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) for the stormwater pathway in Appendix D, "Draft Guidance for Evaluating the Stormwater Pathway and Cleanup Sites" (DEQ, revised May 2008).

1.2 Location

Access onto NW 25th Avenue is through a gated entrance from NW Nicolai Street. NW 25th Avenue, sometimes referred to as an "alley", is a City of Portland right-of-way which previously led to an uncontrolled city dump site known as Guilds Lake Landfill and Incinerator. The dump site is part of the Guilds Lake Remediation Project owned and managed by the City of Portland. The Guilds Lake site has been remediated of previous known hazardous substances which contaminated the soil, although long term methane and groundwater monitoring is ongoing. The cobblestones in NW 25th Avenue were paved with asphalt prior to purchase of the property in 1948 by Calbag. There is no indication that current or historical scrap products handled by Calbag could be PCB sources.

2 FIELD SAMPLING PROCEDURES

2.1.1 Asphalt Sampling

Thirteen asphalt sampling locations, S-1 through S-12 and AS-1, are shown in Figure 1. Asphalt samples were collected by loosening the asphalt from the surface to approximately 0.25 inches deep with clean chisels. New latex gloves were worn to obtain pieces of asphalt until sufficient material was collected to fill a new 4-ounce glass sampling jar with Teflon lined lids furnished by the laboratory. A typical sample location (S-7) is shown in Figure 2.

2.1.2 Soil Sampling

Three soil sampling hand auger locations, B-1 through B-3, are shown in Figure 1. Where the limestone cobblestones were not exposed at the surface, the asphalt surface of approximately 1 inch thick was loosened from the surface to the top of the cobblestones. At each soil sample location, approximately one cobblestone was removed with an electric pneumatic drill prior to collecting soil samples with a hand auger from 5 to 11 inches and 18 to 24 inches depth below ground surface in each boring. The cobblestones measured approximately 4.25 inches wide by 6 inches long by 4.5 inches thick. No cracks were observed within the cobblestones or mortar between them.

At each soil sample location, the cobblestones were underlain by damp, medium brown (5 YR ¾) silty gravels to depths of approximately 20 inches where medium brown (5 YR ¾) silty fine-medium sand was encountered. The 2 inch diameter by 6 inch long core sampler attached to the hand auger was pushed to the upper sampling depths of 5 to 11 inches. The 3.25 inch diameter regular auger was then attached to the auger and the soil from 11 inches to 18 inches was removed. The core sampler was then reattached to the auger and the lower soil sample was obtained by pushing the core sampler from 18 to 24 inches depth. The samples were pushed from the core sampler into clean 4 ounce glass sample jars furnished by the laboratory. The upper soil sample, labeled "3/9", was collected within the silty gravels underlying the cobblestones, and the lower soil sample, labeled "18/24", was collected within silty sand which could possibly be historic dredge fill.

The core auger and sampler were triple rinsed and cleaned between each sample collection, and between each boring location. New latex gloves were worn during each sample extrusion. At completion of sampling, each boring was backfilled and cement was placed into the top approximate 6 inches. Asphalt patch was used to replace areas where the asphalt had been chipped within the roadway.

The sample jars were labeled with a unique sample number and collection times and placed in an ice chest with ice (to keep the sample at about 4°C) for shipment to the laboratory. The sample collection data was entered on the chain-of-custody.

3 LABORATORY ANALYSIS

All PCB analyses were completed using EPA Method 8082: Polychlorinated Biphenyls (PCBs) by Gas Chromatography.

Aroclor is a PCB mixture produced from approximately 1930 to 1979. It is one of the most commonly known trade names for PCB mixtures. There are many types of Aroclors and each has a distinguishing suffix number that indicates the degree of chlorination. The numbering standard for the different Aroclors is as follows: the first two digits generally refer to the number of carbon atoms in the phenyl rings (for PCBs this is 12); the second two numbers indicate the percentage of chlorine by mass in the mixture. For example, the name Aroclor 1254 means that the mixture contains approximately 54% chlorine by weight.[1]

All asphalt and soil samples were submitted to TestAmerica laboratory, Beaverton, Oregon. TestAmerica analyzed the samples to achieve reporting limits appropriate for comparison to DEQ's JSCS screening levels.

3.1 SUMMARY OF RESULTS

The following Table 1 is a summary of PCB analyses of the asphalt and soil samples collected at surface asphalt sample locations "AS-1", "S-1" through "S-12", and subsurface locations "B-1" through "B-3". The laboratory QA/QC results are included in the laboratory reports (Appendix A).

[1] Background information on PCBs from EPA sources.

CHEMICAL	DEQ JSCS[2]	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11	S-12	AS-1	B-1-3/9	B-1-18/24	B-2-3/9	B-2-18/24	B-3-3/9	B-3-18/24
Aroclor 1016	530	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1221	nv	ND< 135	ND< 272	ND< 68	ND< 68.7	ND< 271	ND< 28	ND< 27.3	ND< 67.4	ND< 339	ND< 1350	ND< 68	ND< 137	ND< 271	ND< 14.1	ND< 15.2	ND< 79.8	ND< 17.4	ND< 15.8	ND< 17.4
Aroclor 1232	nv	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1242	nv	**391**	**443**	**92.5**	ND< 34.2	**468**	ND< 13.9	**14.0**	**54.1**	**813**	**4060**	**59.9**	**632**	**777**	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1248	1500	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1254	300	**237**	**487**	**70.8**	**117**	ND< 135	**16.4**	ND< 13.6	**56.5**	**436**	ND< 670	**88.8**	**600**	**874**	**7.66**	ND< 7.53	**209**	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1260	200	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1262	nv	ND< 67.3	ND< 135	ND< 33.8	ND< 34.2	**260**	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	**43.7**	**200**	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67
Aroclor 1268	nv	ND< 67.3	ND< 135	ND< 33.8	**47.1**	ND< 135	ND< 13.9	ND< 13.6	ND< 33.5	ND< 168	ND< 670	ND< 33.8	ND< 68.1	ND< 135	ND< 6.99	ND< 7.53	ND< 39.6	ND< 8.65	ND< 7.84	ND< 8.67

Notes: ND – not detected at or above the method reporting limit shown; nv – no value available; shaded – exceeds JSCS criteria; ***bold*** *– detected;*
hand auger boring 3/9 samples composited from 5 to 11 inches below top of asphalt and 18/24 samples composited from 18 to 24 inches below top of asphalt.

Table 1 –Sample Analyses (*ug/kg*)

[2] Portland Harbor Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) for stormwater pathway

4 CONCLUSIONS

PCBs were detected in all surface asphalt samples and included Aroclors 1242, 1254, 1262 and 1268. Aroclor 1254 was detected at concentrations above the JSCS SLV for the stormwater pathway in surface asphalt samples S-2, S-9, S-12 and AS-1. PCBs were detected below JSCS SLVs in soil samples collected in the hand auger borings B-1 and B-2 from within the silty gravels underlying the cobblestones, at 5 to 11 inches below the top of asphalt. PCBs were not detected in the lower soil samples collected from the silty sand at 18 to 24 inches below the surface.

The analytical results indicate that PCBs detected in previous catch basin sediment samples could originate from PCBs entrapped within the asphalt and possibly from the underlying silty gravels located beneath the limestone cobblestones. Since there is no indication that current or historical scrap products handled by Calbag could be PCB sources, it is likely that historic applications of PCB laden oils were used, such as, in the asphalt mix during construction of NW 25th Avenue and the asphalt covered areas on the north side of the buildings abutting NW 25th Avenue. The detections of PCBs within surface asphalt samples north of NW 25th Avenue may be due to PCBs randomly carried by vehicular traffic from NW 25th Avenue. The ambient PCB concentrations in the area of the investigation are unknown.

5 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk. Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of previous work. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied.

It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Landowner and Client understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. Consultant is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services for the Client may or may not be disclosed in this report.

Richard C. Kent, R.G.

GeoPro Geologic Services LLC

GeoPro Geologic Services LLC
10/09

hand auger boring location (sampled soil beneath cobblestone)

asphalt surface (1/4-inch) sample location

"CB"- Catch Basin

Figure 1 –Sample Locations

Typical Cobblestone

B-2 Location - Cobblestone Removed

B-2 Location - Cobblestone Exposed

B-3 Location - Cobblestone Exposed

S-6 Surface Asphalt Sample Location

S-7 Surface Asphalt Sample Location

Figure 2 – Photographs

APPENDIX A
LABORATORY REPORTS

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

October 23, 2009

Richard Kent
GeoPro Geologic Services
P.O. Box 26
Battle Ground, WA 98604

RE: Calbag Metals Stormwater Drains

Enclosed are the results of analyses for samples received by the laboratory on 10/07/09 15:36.
The following list is a summary of the Work Orders contained in this report, generated on 10/23/09 16:24.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PSJ0246	Calbag Metals Stormwater Dra	080820-09-1

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-1	PSJ0246-01	Soil	10/06/09 14:15	10/07/09 15:36
S-2	PSJ0246-02	Soil	10/02/09 14:50	10/07/09 15:36
S-3	PSJ0246-03	Soil	10/02/09 16:00	10/07/09 15:36
S-4	PSJ0246-04	Soil	10/02/09 16:10	10/07/09 15:36
S-5	PSJ0246-05	Soil	10/05/09 13:17	10/07/09 15:36
S-6	PSJ0246-06	Soil	10/05/09 14:25	10/07/09 15:36
S-7	PSJ0246-07	Soil	10/05/09 14:05	10/07/09 15:36
S-8	PSJ0246-08	Soil	10/05/09 13:50	10/07/09 15:36
S-9	PSJ0246-09	Soil	10/05/09 12:55	10/07/09 15:36
S-10	PSJ0246-10	Soil	10/05/09 15:20	10/07/09 15:36
S-11	PSJ0246-11	Soil	10/06/09 15:35	10/07/09 15:36
S-12	PSJ0246-12	Soil	10/06/09 15:30	10/07/09 15:36
AS-1	PSJ0246-13	Other dry	10/06/09 14:40	10/07/09 15:36
B-1-3/9	PSJ0246-14	Soil	10/02/09 15:00	10/07/09 15:36
B-1-18/24	PSJ0246-15	Soil	10/02/09 15:20	10/07/09 15:36

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-01 (S-1)			Soil			Sampled: 10/06/09 14:15				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	67.3	ug/kg dry	10x	9100400	10/13/09 12:50	10/20/09 11:38	
Aroclor 1221	"	ND	-----	135	"	"	"	"	"	
Aroclor 1232	"	ND	-----	67.3	"	"	"	"	"	
Aroclor 1242	"	**391**	-----	67.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	67.3	"	"	"	"	"	
Aroclor 1254	"	**237**	-----	67.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	67.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	67.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	67.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*44.7%*		*16 - 149 %*			*"*	***Z3***
PSJ0246-02 (S-2)			Soil			Sampled: 10/02/09 14:50				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	135	ug/kg dry	20x	9100400	10/13/09 12:50	10/20/09 12:00	
Aroclor 1221	"	ND	-----	272	"	"	"	"	"	
Aroclor 1232	"	ND	-----	135	"	"	"	"	"	
Aroclor 1242	"	**443**	-----	135	"	"	"	"	"	
Aroclor 1248	"	ND	-----	135	"	"	"	"	"	
Aroclor 1254	"	**487**	-----	135	"	"	"	"	"	
Aroclor 1260	"	ND	-----	135	"	"	"	"	"	
Aroclor 1262	"	ND	-----	135	"	"	"	"	"	
Aroclor 1268	"	ND	-----	135	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*41.1%*		*16 - 149 %*			*"*	***Z3***
PSJ0246-03 (S-3)			Soil			Sampled: 10/02/09 16:00				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	33.8	ug/kg dry	5x	9100400	10/13/09 12:50	10/20/09 12:24	
Aroclor 1221	"	ND	-----	68.0	"	"	"	"	"	
Aroclor 1232	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1242	"	**92.5**	-----	33.8	"	"	"	"	"	
Aroclor 1248	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1254	"	**70.8**	-----	33.8	"	"	"	"	"	
Aroclor 1260	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1262	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1268	"	ND	-----	33.8	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*47.4%*		*16 - 149 %*			*"*	***Z3***

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Estella K Rieben

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-04 (S-4)			**Soil**			**Sampled: 10/02/09 16:10**				**RL3, A-01**
Aroclor 1016	EPA 8082	ND	-----	34.2	ug/kg dry	5x	9100400	10/13/09 12:50	10/20/09 12:51	
Aroclor 1221	"	ND	-----	68.7	"	"	"	"	"	
Aroclor 1232	"	ND	-----	34.2	"	"	"	"	"	
Aroclor 1242	"	ND	-----	34.2	"	"	"	"	"	
Aroclor 1248	"	ND	-----	34.2	"	"	"	"	"	
Aroclor 1254	"	**117**	-----	34.2	"	"	"	"	"	
Aroclor 1260	"	ND	-----	34.2	"	"	"	"	"	
Aroclor 1262	"	ND	-----	34.2	"	"	"	"	"	
Aroclor 1268	"	**47.1**	-----	34.2	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*193%*		*16 - 149 %*			*"*	***ZX***
PSJ0246-05 (S-5)			**Soil**			**Sampled: 10/05/09 13:17**				**RL3, A-01**
Aroclor 1016	EPA 8082	ND	-----	135	ug/kg dry	20x	9100400	10/13/09 12:50	10/20/09 13:18	
Aroclor 1221	"	ND	-----	271	"	"	"	"	"	
Aroclor 1232	"	ND	-----	135	"	"	"	"	"	
Aroclor 1242	"	**468**	-----	135	"	"	"	"	"	
Aroclor 1248	"	ND	-----	135	"	"	"	"	"	
Aroclor 1254	"	ND	-----	135	"	"	"	"	"	
Aroclor 1260	"	ND	-----	135	"	"	"	"	"	
Aroclor 1262	"	**260**	-----	135	"	"	"	"	"	
Aroclor 1268	"	ND	-----	135	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*33.2%*		*16 - 149 %*			*"*	***Z3***
PSJ0246-06 (S-6)			**Soil**			**Sampled: 10/05/09 14:25**				**RL3, A-01**
Aroclor 1016	EPA 8082	ND	-----	13.9	ug/kg dry	2x	9100400	10/13/09 12:50	10/22/09 13:37	
Aroclor 1221	"	ND	-----	28.0	"	"	"	"	"	
Aroclor 1232	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1242	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1248	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1254	"	**16.4**	-----	13.9	"	"	"	"	"	
Aroclor 1260	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1262	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1268	"	ND	-----	13.9	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*58.9%*		*16 - 149 %*			*"*	

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-07 (S-7)			Soil			Sampled: 10/05/09 14:05				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	13.6	ug/kg dry	2x	9100400	10/13/09 12:50	10/22/09 14:04	
Aroclor 1221	"	ND	-----	27.3	"	"	"	"	"	
Aroclor 1232	"	ND	-----	13.6	"	"	"	"	"	
Aroclor 1242	"	**14.0**	-----	13.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	13.6	"	"	"	"	"	
Aroclor 1254	"	ND	-----	13.6	"	"	"	"	"	
Aroclor 1260	"	ND	-----	13.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	13.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	13.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*57.9%*		*16 - 149 %*			*"*	
PSJ0246-08 (S-8)			Soil			Sampled: 10/05/09 13:50				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	33.5	ug/kg dry	5x	9100400	10/13/09 12:50	10/20/09 16:41	
Aroclor 1221	"	ND	-----	67.4	"	"	"	"	"	
Aroclor 1232	"	ND	-----	33.5	"	"	"	"	"	
Aroclor 1242	"	**54.1**	-----	33.5	"	"	"	"	"	
Aroclor 1248	"	ND	-----	33.5	"	"	"	"	"	
Aroclor 1254	"	**56.5**	-----	33.5	"	"	"	"	"	
Aroclor 1260	"	ND	-----	33.5	"	"	"	"	"	
Aroclor 1262	"	ND	-----	33.5	"	"	"	"	"	
Aroclor 1268	"	ND	-----	33.5	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*54.1%*		*16 - 149 %*			*"*	
PSJ0246-09 (S-9)			Soil			Sampled: 10/05/09 12:55				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	168	ug/kg dry	25x	9100400	10/13/09 12:50	10/20/09 17:07	
Aroclor 1221	"	ND	-----	339	"	"	"	"	"	
Aroclor 1232	"	ND	-----	168	"	"	"	"	"	
Aroclor 1242	"	**813**	-----	168	"	"	"	"	"	
Aroclor 1248	"	ND	-----	168	"	"	"	"	"	
Aroclor 1254	"	**436**	-----	168	"	"	"	"	"	
Aroclor 1260	"	ND	-----	168	"	"	"	"	"	
Aroclor 1262	"	ND	-----	168	"	"	"	"	"	
Aroclor 1268	"	ND	-----	168	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*53.4%*		*16 - 149 %*			*"*	***Z3***

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-10 (S-10)			Soil			Sampled: 10/05/09 15:20				RL3
Aroclor 1016	EPA 8082	ND	-----	670	ug/kg dry	100x	9100400	10/13/09 12:50	10/20/09 17:33	
Aroclor 1221	"	ND	-----	1350	"	"	"	"	"	
Aroclor 1232	"	ND	-----	670	"	"	"	"	"	
Aroclor 1242	"	**4060**	-----	670	"	"	"	"	"	
Aroclor 1248	"	ND	-----	670	"	"	"	"	"	
Aroclor 1254	"	ND	-----	670	"	"	"	"	"	
Aroclor 1260	"	ND	-----	670	"	"	"	"	"	
Aroclor 1262	"	ND	-----	670	"	"	"	"	"	
Aroclor 1268	"	ND	-----	670	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*16 - 149 %*			*"*	*Z3*
PSJ0246-11 (S-11)			Soil			Sampled: 10/06/09 15:35				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	33.8	ug/kg dry	5x	9100400	10/13/09 12:50	10/20/09 17:59	
Aroclor 1221	"	ND	-----	68.0	"	"	"	"	"	
Aroclor 1232	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1242	"	**59.9**	-----	33.8	"	"	"	"	"	
Aroclor 1248	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1254	"	**88.8**	-----	33.8	"	"	"	"	"	
Aroclor 1260	"	ND	-----	33.8	"	"	"	"	"	
Aroclor 1262	"	**43.7**	-----	33.8	"	"	"	"	"	
Aroclor 1268	"	ND	-----	33.8	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*79.8%*		*16 - 149 %*			*"*	
PSJ0246-12 (S-12)			Soil			Sampled: 10/06/09 15:30				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	68.1	ug/kg dry	10x	9100400	10/13/09 12:50	10/20/09 18:25	
Aroclor 1221	"	ND	-----	137	"	"	"	"	"	
Aroclor 1232	"	ND	-----	68.1	"	"	"	"	"	
Aroclor 1242	"	**632**	-----	68.1	"	"	"	"	"	
Aroclor 1248	"	ND	-----	68.1	"	"	"	"	"	
Aroclor 1254	"	**600**	-----	68.1	"	"	"	"	"	
Aroclor 1260	"	ND	-----	68.1	"	"	"	"	"	
Aroclor 1262	"	**200**	-----	68.1	"	"	"	"	"	
Aroclor 1268	"	ND	-----	68.1	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*268%*		*16 - 149 %*			*"*	*Z3*

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-13 (AS-1)			**Other dry**			**Sampled: 10/06/09 14:40**				**RL3, A-01**
Aroclor 1016	EPA 8082	ND	-----	135	ug/kg dry	20x	9100400	10/13/09 12:50	10/20/09 18:51	
Aroclor 1221	"	ND	-----	271	"	"	"	"	"	
Aroclor 1232	"	ND	-----	135	"	"	"	"	"	
Aroclor 1242	"	**777**	-----	135	"	"	"	"	"	
Aroclor 1248	"	ND	-----	135	"	"	"	"	"	
Aroclor 1254	"	**874**	-----	135	"	"	"	"	"	
Aroclor 1260	"	ND	-----	135	"	"	"	"	"	
Aroclor 1262	"	ND	-----	135	"	"	"	"	"	
Aroclor 1268	"	ND	-----	135	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*43.5%*		*16 - 149 %*			*"*	***Z3***
PSJ0246-14 (B-1-3/9)			**Soil**			**Sampled: 10/02/09 15:00**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	6.99	ug/kg dry	1x	9100400	10/13/09 12:50	10/22/09 17:39	
Aroclor 1221	"	ND	-----	14.1	"	"	"	"	"	
Aroclor 1232	"	ND	-----	6.99	"	"	"	"	"	
Aroclor 1242	"	ND	-----	6.99	"	"	"	"	"	
Aroclor 1248	"	ND	-----	6.99	"	"	"	"	"	
Aroclor 1254	"	**7.66**	-----	6.99	"	"	"	"	"	
Aroclor 1260	"	ND	-----	6.99	"	"	"	"	"	
Aroclor 1262	"	ND	-----	6.99	"	"	"	"	"	
Aroclor 1268	"	ND	-----	6.99	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*55.1%*		*16 - 149 %*			*"*	
PSJ0246-15 (B-1-18/24)			**Soil**			**Sampled: 10/02/09 15:20**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	7.53	ug/kg dry	1x	9100400	10/13/09 12:50	10/22/09 18:04	
Aroclor 1221	"	ND	-----	15.2	"	"	"	"	"	
Aroclor 1232	"	ND	-----	7.53	"	"	"	"	"	
Aroclor 1242	"	ND	-----	7.53	"	"	"	"	"	
Aroclor 1248	"	ND	-----	7.53	"	"	"	"	"	
Aroclor 1254	"	ND	-----	7.53	"	"	"	"	"	
Aroclor 1260	"	ND	-----	7.53	"	"	"	"	"	
Aroclor 1262	"	ND	-----	7.53	"	"	"	"	"	
Aroclor 1268	"	ND	-----	7.53	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*68.2%*		*16 - 149 %*			*"*	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Percent Dry Weight (Solids) per ASTM D2216-80
TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-01	**(S-1)**			**Soil**			**Sampled: 10/06/09 14:15**				
% Solids		NCA SOP	**98.6**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-02	**(S-2)**			**Soil**			**Sampled: 10/02/09 14:50**				
% Solids		NCA SOP	**98.5**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-03	**(S-3)**			**Soil**			**Sampled: 10/02/09 16:00**				
% Solids		NCA SOP	**98.2**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-04	**(S-4)**			**Soil**			**Sampled: 10/02/09 16:10**				
% Solids		NCA SOP	**97.4**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-05	**(S-5)**			**Soil**			**Sampled: 10/05/09 13:17**				
% Solids		NCA SOP	**98.5**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-06	**(S-6)**			**Soil**			**Sampled: 10/05/09 14:25**				
% Solids		NCA SOP	**95.6**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-07	**(S-7)**			**Soil**			**Sampled: 10/05/09 14:05**				
% Solids		NCA SOP	**97.4**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-08	**(S-8)**			**Soil**			**Sampled: 10/05/09 13:50**				
% Solids		NCA SOP	**99.3**	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	
PSJ0246-09	**(S-9)**			**Soil**			**Sampled: 10/05/09 12:55**				
% Solids		NCA SOP	**98.9**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	
PSJ0246-10	**(S-10)**			**Soil**			**Sampled: 10/05/09 15:20**				
% Solids		NCA SOP	**98.9**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	
PSJ0246-11	**(S-11)**			**Soil**			**Sampled: 10/06/09 15:35**				

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GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Percent Dry Weight (Solids) per ASTM D2216-80

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0246-11 (S-11)			**Soil**			**Sampled: 10/06/09 15:35**				
% Solids	NCA SOP	**97.9**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	
PSJ0246-12 (S-12)			**Soil**			**Sampled: 10/06/09 15:30**				
% Solids	NCA SOP	**97.8**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	
PSJ0246-13 (AS-1)			**Other dry**			**Sampled: 10/06/09 14:40**				
% Solids	NCA SOP	**98.9**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	
PSJ0246-14 (B-1-3/9)			**Soil**			**Sampled: 10/02/09 15:00**				
% Solids	NCA SOP	**95.2**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	
PSJ0246-15 (B-1-18/24)			**Soil**			**Sampled: 10/02/09 15:20**				
% Solids	NCA SOP	**88.0**	-----	0.0100	% by Weight	1x	9100356	10/12/09 07:25	10/12/09 07:25	

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P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100400 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9100400-BLK1)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	ND	---	6.65	ug/kg wet	1x	--	--	--	--	--	--	10/20/09 19:44	
Aroclor 1221	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 67.6%*		*Limits: 16-149%*									*10/20/09 19:44*	
Blank (9100400-BLK2)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	ND	---	6.65	ug/kg wet	1x	--	--	--	--	--	--	10/20/09 14:50	
Aroclor 1221	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 57.0%*		*Limits: 16-149%*									*10/20/09 14:50*	
LCS (9100400-BS1)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	29.8	---	6.65	ug/kg wet	1x	--	33.3	89.6%	(57-135)	--	--	10/20/09 20:10	
Aroclor 1260	"	29.7	---	6.65	"	"	--	"	89.2%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 72.9%*		*Limits: 16-149%*									*10/20/09 20:10*	
LCS (9100400-BS2)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	26.9	---	6.65	ug/kg wet	1x	--	33.3	80.7%	(57-135)	--	--	10/20/09 15:16	
Aroclor 1260	"	26.6	---	6.65	"	"	--	"	79.9%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 63.0%*		*Limits: 16-149%*									*10/20/09 15:16*	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100400 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (9100400-BSD1)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	32.4	---	6.64	ug/kg wet	1x	--	33.2	97.5%	(57-135)	8.15%	(25)	10/20/09 20:36	
Aroclor 1260	"	32.3	---	6.64	"	"	--	"	97.4%	(60-135)	8.53%	(27)	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 78.7%*		*Limits: 16-149%*									*10/20/09 20:36*	
LCS Dup (9100400-BSD2)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	32.4	---	6.64	ug/kg wet	1x	--	33.2	97.6%	(57-135)	18.6%	(25)	10/20/09 15:42	
Aroclor 1260	"	32.8	---	6.64	"	"	--	"	98.9%	(60-135)	21.1%	(27)	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 76.5%*		*Limits: 16-149%*									*10/20/09 15:42*	

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Percent Dry Weight (Solids) per ASTM D2216-80 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100356 **Soil Preparation Method: Dry Weight**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9100356-DUP1)				QC Source: PSJ0253-01				Extracted: 10/12/09 07:25						
% Solids	NCA SOP	87.7	---	0.0100	% by Weight	1x	87.8	--	--	--	0.114%	(20)	10/12/09 07:25	

QC Batch: 9100358 **Soil Preparation Method: Dry Weight**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9100358-DUP1)				QC Source: PSJ0276-02				Extracted: 10/12/09 07:26						
% Solids	NCA SOP	77.4	---	0.0100	% by Weight	1x	77.1	--	--	--	0.388%	(20)	10/12/09 07:26	

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	080820-09-1	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	10/23/09 16:24

Notes and Definitions

Report Specific Notes:

- A-01 - Due to the presence of multiple Aroclors and/or extreme weathering, the PCB peaks detected do not closely match any of the standards used to calibrate our instruments. Therefore, the results have increased qualitative and quantitative uncertainty.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
- ZX - Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

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11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
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2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PSJ0246

CLIENT: Calbag Metals Co.

REPORT TO: GeoPro Geologic Services LLC
ADDRESS: PO Box 26
Battle Ground WA 98604
PHONE: 360-666-1465 FAX:

INVOICE TO: GeoPro Geologic Services LLC
PO Box 26
Battle Ground WA 98604

P.O. NUMBER:

PROJECT NAME: Calbag Stormwater
PROJECT NUMBER: 090812
SAMPLED BY:

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: ~~10~~ STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCB 8082 (*)	(*) Portland Harbor Limits												MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	S-1	10/6/09 1415	X																
2	S-2	10/3/09 1450																	
3	S-3	10/2/09 1600																	
4	S-4	10/2/09 1610																	
5	S-5	10/5/09 1317																	
6	S-6	10/5/09 1425																	
7	S-7	10/5/09 1405																	
8	S-8	10/5/09 1350																	
9	S-9	10/5/09 1255																	
10	S-10	10/5/09 1520																	

RELEASED BY: [signature]
PRINT NAME: FIRM: GGS LLC DATE: 10/7/09 TIME: 1536
RECEIVED BY: [signature]
PRINT NAME: FIRM: TAP DATE: 10/7/09 TIME: 1536

RELEASED BY:
PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY:
PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 5.8

PAGE OF

TAL-1000(0408)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY REPORT

Work Order: PSJ0246

TURNAROUND

OTHER

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCB 8082 *	* Portland Harbor Limits
S-11	10/6/09 1535		
S-12	10/6/09 1530		
AS-1	10/6/09 1440		

RELEASED BY: [signature] FIRM: GGS LLC DATE: 10/7/09 TIME: 1537

RECEIVED BY: [signature] TAP 10/7/09 1537

5.8

ADDITIONAL REMARKS

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSJ0246 Date/Time Received: 10/7/09 1536
Client Name and Project: Calbag Metals

Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☒PDT/PST ☐AK ☐OTHER

Unpacking Checks:
Cooler #(s): 1
Temperatures: 5.8
Digi #1 ☐ Digi #2 ☐ IR Gun ☑ (☐Plastic ☑Glass)

Temperature out of Range:
__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other:______________

Initials: PS

N/A	Yes	No	
☑	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☑	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☑	☐	3. Chain of Custody present? If no, document on NOD.
	☑	☐	4. Bottles received intact? If no, document on NOD.
	☑	☐	5. Sample is not multiphasic? If no, document on NOD.
	☑	☐	6. Proper Container and preservatives used? If no, document on NOD.
☑	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☑	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☑	☐	☐	9. HF Dilution required?
	☑	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☑ PS	☑	11. Did chain of custody agree with samples received? If no, document on NOD.
	☐	☑	12. Is the "Sampled by" section of the COC completed?
☑	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☑	☐	☐	14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
	☐	☑	15. Did samples require preservation with sodium thiosulfate?
☑	☐	☐	16. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☑	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☑	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☑	☐	☐	19. Are analyses with short holding times received in hold?
	☑	☐	20. Was Standard Turn Around (TAT) requested?
	☑	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

Rec 2 samples not on COC
B-1-3/4 10/2/09 @ 1500
+
B-1-13/24 10/2/09 @ 1520
PS

F:\Sample_Receiving\Receiving_Documents\Forms (effective 3/16/09)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSJ0246

Login Checks:

Initials: PS

N/A	Yes	No	
	☑	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☑	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☑	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☑	☐	☐	25. Were special log in instructions read and followed?
	☑	☐	26. Were tests logged checked against the COC?
☑	☐	☐	27. Were rush notices printed and delivered?
☑	☐	☐	28. Were short hold notices printed and delivered?
☑	☐	☐	29. Were subcontract COCs printed?
☑	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: AH

N/A	Yes	No	
☒	☐	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☒	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☒	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☒	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☒	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☐	☒	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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ORELAP#: OR100021

October 23, 2009

Chuck Gleason
Calbag Metals Company-Portland
P.O. Box 10067
Portland, OR 97296

RE: Main

Enclosed are the results of analyses for samples received by the laboratory on 10/09/09 15:07. The following list is a summary of the Work Orders contained in this report, generated on 10/23/09 17:41.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PSJ0356	Main	Not Required

TestAmerica Portland

Christina Woodcock For Brian Cone, Industrial Services Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Calbag Metals Company-Portland	Project Name:	**Main**	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-2-3/9	PSJ0356-01	Soil	10/08/09 14:14	10/09/09 15:07
B-2-18/24	PSJ0356-02	Soil	10/08/09 15:10	10/09/09 15:07
B-3-3/9	PSJ0356-03	Soil	10/09/09 12:05	10/09/09 15:07
B-3-18/24	PSJ0356-04	Soil	10/09/09 12:39	10/09/09 15:07

TestAmerica Portland

Christina M. Woodcock

Christina Woodcock For Brian Cone, Industrial Services Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Calbag Metals Company-Portland	Project Name: **Main**	
P.O. Box 10067	Project Number: Not Required	Report Created:
Portland, OR 97296	Project Manager: Chuck Gleason	10/23/09 17:41

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0356-01 (B-2-3/9)			Soil			Sampled: 10/08/09 14:14				RL3
Aroclor 1016	EPA 8082	ND	-----	39.6	ug/kg dry	5x	9100400	10/13/09 12:50	10/22/09 15:51	
Aroclor 1221	"	ND	-----	79.8	"	"	"	"	"	
Aroclor 1232	"	ND	-----	39.6	"	"	"	"	"	
Aroclor 1242	"	ND	-----	39.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	39.6	"	"	"	"	"	
Aroclor 1254	"	**209**	-----	39.6	"	"	"	"	"	**A-02**
Aroclor 1260	"	ND	-----	39.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	39.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	39.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*52.4%*		*16 - 149 %*			*"*	
PSJ0356-02 (B-2-18/24)			Soil			Sampled: 10/08/09 15:10				RL3
Aroclor 1016	EPA 8082	ND	-----	8.65	ug/kg dry	1x	9100400	10/13/09 12:50	10/22/09 16:45	
Aroclor 1221	"	ND	-----	17.4	"	"	"	"	"	
Aroclor 1232	"	ND	-----	8.65	"	"	"	"	"	
Aroclor 1242	"	ND	-----	8.65	"	"	"	"	"	
Aroclor 1248	"	ND	-----	8.65	"	"	"	"	"	
Aroclor 1254	"	ND	-----	8.65	"	"	"	"	"	
Aroclor 1260	"	ND	-----	8.65	"	"	"	"	"	
Aroclor 1262	"	ND	-----	8.65	"	"	"	"	"	
Aroclor 1268	"	ND	-----	8.65	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*55.2%*		*16 - 149 %*			*"*	
PSJ0356-03 (B-3-3/9)			Soil			Sampled: 10/09/09 12:05				RL3, A-01
Aroclor 1016	EPA 8082	ND	-----	7.84	ug/kg dry	1x	9100400	10/13/09 12:50	10/22/09 18:30	
Aroclor 1221	"	ND	-----	15.8	"	"	"	"	"	
Aroclor 1232	"	ND	-----	7.84	"	"	"	"	"	
Aroclor 1242	"	ND	-----	7.84	"	"	"	"	"	
Aroclor 1248	"	ND	-----	7.84	"	"	"	"	"	
Aroclor 1254	"	ND	-----	7.84	"	"	"	"	"	
Aroclor 1260	"	ND	-----	7.84	"	"	"	"	"	
Aroclor 1262	"	ND	-----	7.84	"	"	"	"	"	
Aroclor 1268	"	ND	-----	7.84	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*61.2%*		*16 - 149 %*			*"*	

TestAmerica Portland

Christina Woodcock For Brian Cone, Industrial Services Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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Calbag Metals Company-Portland	Project Name:	**Main**	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0356-04 (B-3-18/24)			**Soil**			**Sampled: 10/09/09 12:39**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	8.67	ug/kg dry	1x	9100400	10/13/09 12:50	10/22/09 17:12	
Aroclor 1221	"	ND	-----	17.4	"	"	"	"	"	
Aroclor 1232	"	ND	-----	8.67	"	"	"	"	"	
Aroclor 1242	"	ND	-----	8.67	"	"	"	"	"	
Aroclor 1248	"	ND	-----	8.67	"	"	"	"	"	
Aroclor 1254	"	ND	-----	8.67	"	"	"	"	"	
Aroclor 1260	"	ND	-----	8.67	"	"	"	"	"	
Aroclor 1262	"	ND	-----	8.67	"	"	"	"	"	
Aroclor 1268	"	ND	-----	8.67	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*65.2%*		*16 - 149 %*				*"*

TestAmerica Portland

Christina Woodcock For Brian Cone, Industrial Services Manager

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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Calbag Metals Company-Portland	Project Name:	**Main**	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

Percent Dry Weight (Solids) per ASTM D2216-80

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0356-01 (B-2-3/9)			**Soil**			**Sampled: 10/08/09 14:14**				
% Solids	NCA SOP	**84.0**	-----	0.0100	% by Weight	1x	9100359	10/12/09 07:28	10/12/09 07:28	
PSJ0356-02 (B-2-18/24)			**Soil**			**Sampled: 10/08/09 15:10**				
% Solids	NCA SOP	**77.0**	-----	0.0100	% by Weight	1x	9100359	10/12/09 07:28	10/12/09 07:28	
PSJ0356-03 (B-3-3/9)			**Soil**			**Sampled: 10/09/09 12:05**				
% Solids	NCA SOP	**84.5**	-----	0.0100	% by Weight	1x	9100359	10/12/09 07:28	10/12/09 07:28	
PSJ0356-04 (B-3-18/24)			**Soil**			**Sampled: 10/09/09 12:39**				
% Solids	NCA SOP	**76.3**	-----	0.0100	% by Weight	1x	9100359	10/12/09 07:28	10/12/09 07:28	

TestAmerica Portland

Christina M. Woodcock

Christina Woodcock For Brian Cone, Industrial Services Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Calbag Metals Company-Portland	Project Name:	**Main**	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100400 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9100400-BLK1)									**Extracted: 10/13/09 12:50**					RL3
Aroclor 1016	EPA 8082	ND	---	6.65	ug/kg wet	1x	--	--	--	--	--	--	10/20/09 19:44	
Aroclor 1221	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 67.6%*		*Limits: 16-149%*									*10/20/09 19:44*	
Blank (9100400-BLK2)									**Extracted: 10/13/09 12:50**					RL3
Aroclor 1016	EPA 8082	ND	---	6.65	ug/kg wet	1x	--	--	--	--	--	--	10/20/09 14:50	
Aroclor 1221	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 57.0%*		*Limits: 16-149%*									*10/20/09 14:50*	
LCS (9100400-BS1)									**Extracted: 10/13/09 12:50**					RL3
Aroclor 1016	EPA 8082	29.8	---	6.65	ug/kg wet	1x	--	33.3	89.6%	(57-135)	--	--	10/20/09 20:10	
Aroclor 1260	"	29.7	---	6.65	"	"	--	"	89.2%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 72.9%*		*Limits: 16-149%*									*10/20/09 20:10*	
LCS (9100400-BS2)									**Extracted: 10/13/09 12:50**					RL3
Aroclor 1016	EPA 8082	26.9	---	6.65	ug/kg wet	1x	--	33.3	80.7%	(57-135)	--	--	10/20/09 15:16	
Aroclor 1260	"	26.6	---	6.65	"	"	--	"	79.9%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 63.0%*		*Limits: 16-149%*									*10/20/09 15:16*	

TestAmerica Portland

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ph: (503) 906.9200 fax: (503) 906.9210

Calbag Metals Company-Portland	Project Name:	**Main**	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100400 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (9100400-BSD1)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	32.4	---	6.64	ug/kg wet	1x	--	33.2	97.5%	(57-135)	8.15%	(25)	10/20/09 20:36	
Aroclor 1260	"	32.3	---	6.64	"	"	--	"	97.4%	(60-135)	8.53%	(27)	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 78.7%*		*Limits: 16-149%*									*10/20/09 20:36*	
LCS Dup (9100400-BSD2)								**Extracted: 10/13/09 12:50**						RL3
Aroclor 1016	EPA 8082	32.4	---	6.64	ug/kg wet	1x	--	33.2	97.6%	(57-135)	18.6%	(25)	10/20/09 15:42	
Aroclor 1260	"	32.8	---	6.64	"	"	--	"	98.9%	(60-135)	21.1%	(27)	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 76.5%*		*Limits: 16-149%*									*10/20/09 15:42*	

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Calbag Metals Company-Portland	Project Name:	Main	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

Percent Dry Weight (Solids) per ASTM D2216-80 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100359 **Soil Preparation Method: Dry Weight**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9100359-DUP1)				QC Source: PSJ0363-01				Extracted: 10/12/09 07:28						
% Solids	NCA SOP	73.3	---	0.0100	% by Weight	1x	73.8	--	--	--	0.680%	(20)	10/12/09 07:28	

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Christina Woodcock For Brian Cone, Industrial Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Calbag Metals Company-Portland	Project Name:	**Main**	
P.O. Box 10067	Project Number:	Not Required	Report Created:
Portland, OR 97296	Project Manager:	Chuck Gleason	10/23/09 17:41

Notes and Definitions

Report Specific Notes:

- A-01 - Due to the presence of multiple Aroclors and/or extreme weathering, the PCB peaks detected do not closely match any of the standards used to calibrate our instruments. Therefore, the results have increased qualitative and quantitative uncertainty.
- A-02 - The Aroclor pattern does not closely match standards and is likely due to extreme weathering or other environmental processes.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

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11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave. Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave.Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PSJ0356

CLIENT: CALBAG METALS CO.
REPORT TO: GeoPro Geologic Services LLC
ADDRESS: PO Box 26
Battle Ground WA 98604
PHONE: 360 666 1465 FAX:

INVOICE TO: GeoPro Geologic Services LLC
PO Box 26
Battle Ground WA 98604
P.O. NUMBER: 090812-1006

PROJECT NAME:
PROJECT NUMBER:
SAMPLED BY:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: [X] 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges

PRESERVATIVE

REQUESTED ANALYSES: PCB 8082 (*) must be at < 50 ppb PORTLAND HARBOR DETECTION LEVELS

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCB 8082	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	B-2-3/9	10/8/09 1414	↓	S	2	B2	
2	B-2-15/24	10/8/09 1516	↓	S	2	B2	
3	B-3-3/9	10/9/09 1205	↓	S	1	B-3	
4	B-3-18/24	10/9/09 1239	↓	S	1	B3	
5							
6							
7							
8							
9							
10							

RELEASED BY: PRINT NAME: C. Cortland Kent FIRM: GeoPro LLC DATE: 10/9/09 TIME: ~~307~~ 1507
RECEIVED BY: PRINT NAME: KAREN WILSON FIRM: TA-P DATE: 10-9-09 TIME: 1507

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:
TEMP: 10.5°C
PAGE OF

TAL-1000(0408)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSJ0356 Date/Time Received: 10-9-09 15:07

Client Name and Project: CALBAG

Time Zone:

☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☒ PDT/PST ☐ AK ☐ OTHER

Unpacking Checks:

Cooler #(s): 1

Temperatures: 10.5

Digi #1	Digi #2	IR Gun
☐	☐	☒ (☐ Plastic ☒ Glass)

Temperature out of Range:

__ Not enough or No Ice

__ Ice Melted

__ W/in 4 Hrs of collection

__ Other: ______

Initials: ______

N/A	Yes	No	
☒	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☒	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☒	☐	3. Chain of Custody present? If no, document on NOD.
	☒	☐	4. Bottles received intact? If no, document on NOD.
	☒	☐	5. Sample is not multiphasic? If no, document on NOD.
	☒	☐	6. Proper Container and preservatives used? If no, document on NOD.
☒	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☒	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☒	☐	☐	9. HF Dilution required?
	☒	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☒	☐	11. Did chain of custody agree with samples received? If no, document on NOD.
	☐	☒	12. Is the "Sampled by" section of the COC completed?
☒	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☒	☐	☐	14. Were VOA vials preserved? ☐ HCl ☐ Sodium Thiosulfate ☐ Ascorbic Acid
	☐	☒	15. Did samples require preservation with sodium thiosulfate?
☒	☐	☐	16. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☒	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☒	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☒	☐	☐	19. Are analyses with short holding times received in hold?
	☒	☐	20. Was Standard Turn Around (TAT) requested?
	☒	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSJ0356

Login Checks:

Initials: PS

N/A	Yes	No	
	☑	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☑	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☑	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☑	☐	☐	25. Were special log in instructions read and followed?
	☑	☐	26. Were tests logged checked against the COC?
☑	☐	☐	27. Were rush notices printed and delivered?
☑	☐	☐	28. Were short hold notices printed and delivered?
☑	☐	☐	29. Were subcontract COCs printed?
☑	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: PS

N/A	Yes	No	
☑	☐	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☑	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☑	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☑	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☑	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☑	☐	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

F:\Sample_Receiving\Receiving_Documents\Forms (effective 3/16/09)

Appendix H

Stormwater Source Control Investigation

PCB Surface Sampling Letter Report

2495 NW Nicolai Street, January 2010

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

January 19, 2010

RE: Stormwater Source Control Investigation
PCB Surface Sampling

Mr. Chuck Gleason
Calbag Metals Company
2495 NW Nicolai Street
Portland, OR 97210

Dear Chuck:

Per your request, an investigation was made to collect cement and asphalt within the building and surrounding area at 2495 NW Nicolai Street, Portland, Oregon, and analyze the samples for PCBs (polychlorinated biphenyls). The field investigation was conducted on December 31, 2009 pursuant to a Work Plan approved on December 21, 2009 by Mr. Jim Orr, Project Manager, Oregon Department of Environmental Quality (DEQ).

1 BACKGROUND

1.1 Objectives

The following are specific objectives of the investigation:

1. Collect four cement samples at 0 to 0.25 inches from the pad foundation of the building at 2495 NW Nicolai Street.
2. Collect one cement and two asphalt samples at 0 to 0.25 inches from the roadways south and east of the building at 2495 NW Nicolai Street.
3. Analyze each cement and asphalt sample for PCBs.
4. Screen the analytical results against Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) for the stormwater pathway in Appendix D, "Draft Guidance for Evaluating the Stormwater Pathway and Cleanup Sites" (DEQ, revised May 2008).

1.2 Site Description

The Site is located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1) which includes a building housing corporate offices, storage and a processing warehouse. The building covers 67,281 square feet and consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof. The Site also contains an open shed with a metal roof. The Site consists of 1.68 acres developed with the industrial building, and 0.23 acres of undeveloped land. The ground surface at the site is essentially flat. Ground cover consists primarily of a building, asphalt parking, and a paved driving and staging area north of the building. The Site can be accessed from the south via entrances from N.W. Nicolai St., and from the west via an entrance from N.W. 25th Place. The site is zoned industrial.

The Site is operated by Calbag Metals Company, a nonferrous scrap metal company which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals essentially include aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or PCBs. Fabrication does not occur at the Site.

The primary outdoor activity is unloading and loading of trucks and customer vehicles. The vast bulk of metals are stored indoors. Outdoor storage is generally limited to full and empty hoppers, empty steel boxes, some baled metals, and trucks. All outdoor areas are paved.

A NPDES Storm Water Discharge Permit (#1200-Z) issued by DEQ is current through June 30, 2012. The back lot eventually drains to the City of Portland's Outfall #16 and the front lot drains to Outfall #15, which is diverted to the City's Wastewater Treatment Plant via a large pipeline.

2 FIELD SAMPLING PROCEDURES

2.1.1 Cement and Asphalt Sampling

Nine cement and asphalt samples were collected at locations S-13 through S-19 (see Figure 2). Two duplicate samples, S-14B and S-19B were collected. The samples were collected by loosening the concrete or asphalt from the surface to approximately 0.25 inches deep with an electric pneumatic hammer chisel. New latex gloves were worn while collecting samples of cement or asphalt until sufficient material was collected to fill a new 4-ounce glass sampling jar with Teflon lined lids furnished by the laboratory. The samples were collected biased toward finer grained particles. Typical sample locations are shown in Figure 3. Sample Field Logs are included in Appendix B.

3 LABORATORY ANALYSIS

All PCB analyses were completed using EPA Method 8082: Polychlorinated Biphenyls (PCBs) by Gas Chromatography.

Aroclor is a PCB mixture produced from approximately 1930 to 1979. It is one of the most commonly known trade names for PCB mixtures. There are many types of Aroclors and each has a distinguishing suffix number that indicates the degree of chlorination. The numbering standard for the different Aroclors is as follows: the first two digits generally refer to the number of carbon atoms in the phenyl rings (for PCBs this is 12); the second two numbers indicate the percentage of chlorine by mass in the mixture. For example, the name Aroclor 1254 means that the mixture contains approximately 54% chlorine by weight.[1]

All cement and asphalt samples were submitted to TestAmerica laboratory, Beaverton, Oregon. TestAmerica analyzed the samples to achieve reporting limits appropriate for comparison to DEQ's JSCS screening levels.

3.1 SUMMARY OF RESULTS

The following Table 1 is a summary of PCB analyses of the cement and asphalt samples collected at sample locations S-13 through S-19. The laboratory QA/QC results are included in the laboratory reports (Appendix A). Samples S-14A and S-14B, and S-19A and S-19B, are duplicates. The analyses of S-14A and S-14B duplicates are within verifiable ranges and confirm the accuracy the quality control and assurance of field and laboratory techniques. The difference in analyses of samples S-19A and S-19B indicate some variation in field or laboratory techniques.

[1] Background information on PCBs from EPA sources.

CHEMICAL	DEQ JSCS[2]	S-13 exterior cement	S-14A exterior asphalt	S-14B exterior asphalt	S-15 exterior asphalt	S-16 interior cement	S-17 interior cement	S-18 interior cement	S-19A interior cement	S-19B interior cement
Aroclor 1016	530	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1221	nv	ND<7.76	ND<27.9	ND<28.3	ND<14.1	ND<277	ND<140	ND<282	ND<70.1	ND<279
Aroclor 1232	nv	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1242	nv	**9.44**	**58.6**	**43.2**	**28.8**	**1300**	**787**	**1560**	**756**	**901**
Aroclor 1248	1500	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1254	300	**20.8**	**62.8**	**69.6**	**33.9**	**685**	**545**	**961**	**273**	**349**
Aroclor 1260	200	**10.8**	**21.6**	**21.6**	**12.6**	**217**	**167**	**278**	**78.0**	ND<139
Aroclor 1262	nv	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139
Aroclor 1268	nv	ND<3.86	ND<13.9	ND<14.1	ND<7.02	ND<138	ND<69.4	ND<140	ND<70.1	ND<139

Notes: ND – not detected at or above the method reporting limit shown; nv – no value available; shaded – exceeds JSCS criteria; ***bold*** *– detected*

Table 1 –Sample Analyses (*ug/kg*)

[2] Portland Harbor Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s) for stormwater pathway

4 CONCLUSIONS

Selected PCBs were detected in all surface asphalt and cement samples. Aroclors detected include 1242, 1254, and 1260. Aroclor 1254 was detected at concentrations above the JSCS SLV for the stormwater pathway in surface samples S-16 (interior cement), S-17 (interior cement), S-18 (interior cement) and duplicate sample S-19B (interior cement). Aroclor 1260 was detected at concentrations above the JSCS SLV for the stormwater pathway in surface sample S-18 (interior cement). Aroclors 1016, 1221, 1232, 1248, 1262 and 1268 were not detected in any samples.

The analytical results indicate that PCBs detected in previous catch basin sediment samples could originate from PCBs entrapped within the interior cement floor foundation of the building and exterior asphalt parking and roadways.

Since there is no indication that current or historical scrap products handled by Calbag could be PCB sources, it is likely that historic activities of unknown origin were the source(s) of the detected PCBs. The ambient PCB concentrations in the area of the investigation are unknown.

5 LIMITATIONS

This report has been prepared for the landowner(s) or landowner's agents and Consultant does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk.

Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of previous work. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered.

Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied.

It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Landowner and Client understand that failure to sample any material, including soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. Consultant is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future.

This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services for the Client may or may not be disclosed in this report.

Richard C. Kent, R.G.

GeoPro Geologic Services LLC

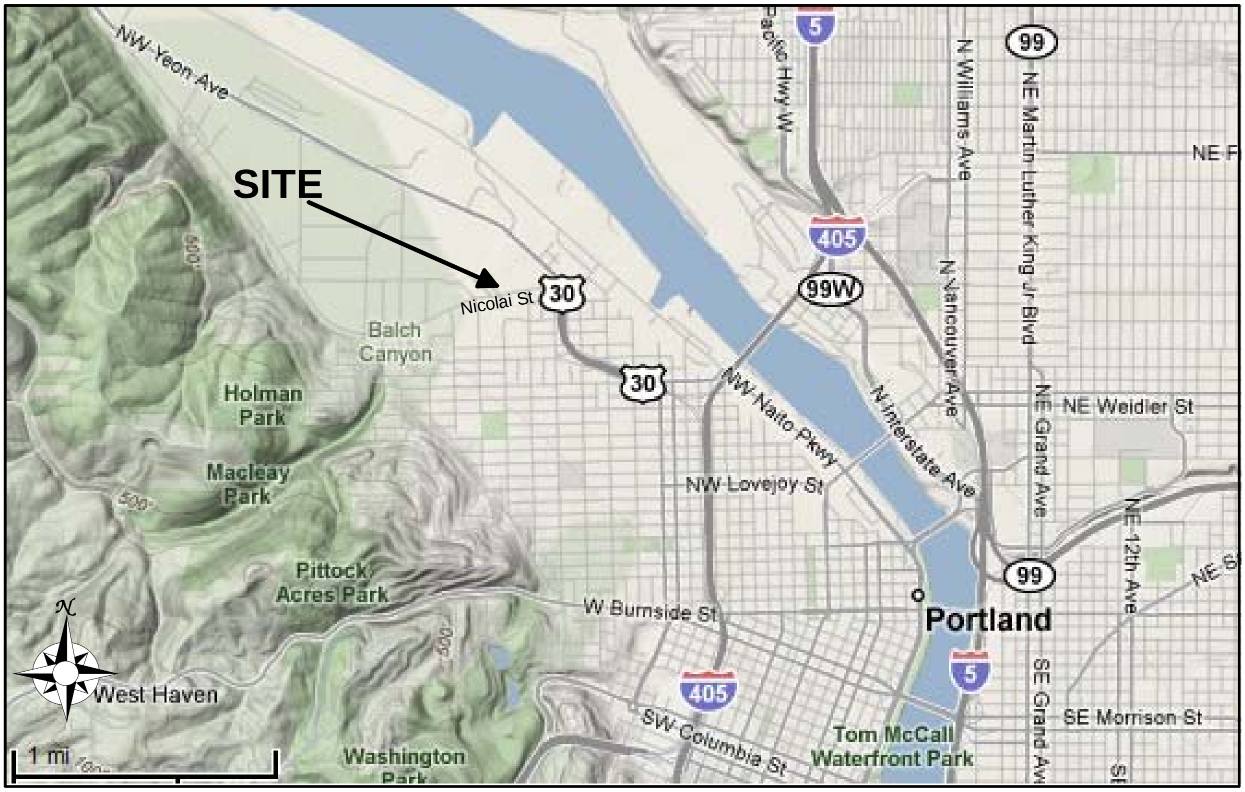

Figure 1 – Location Map

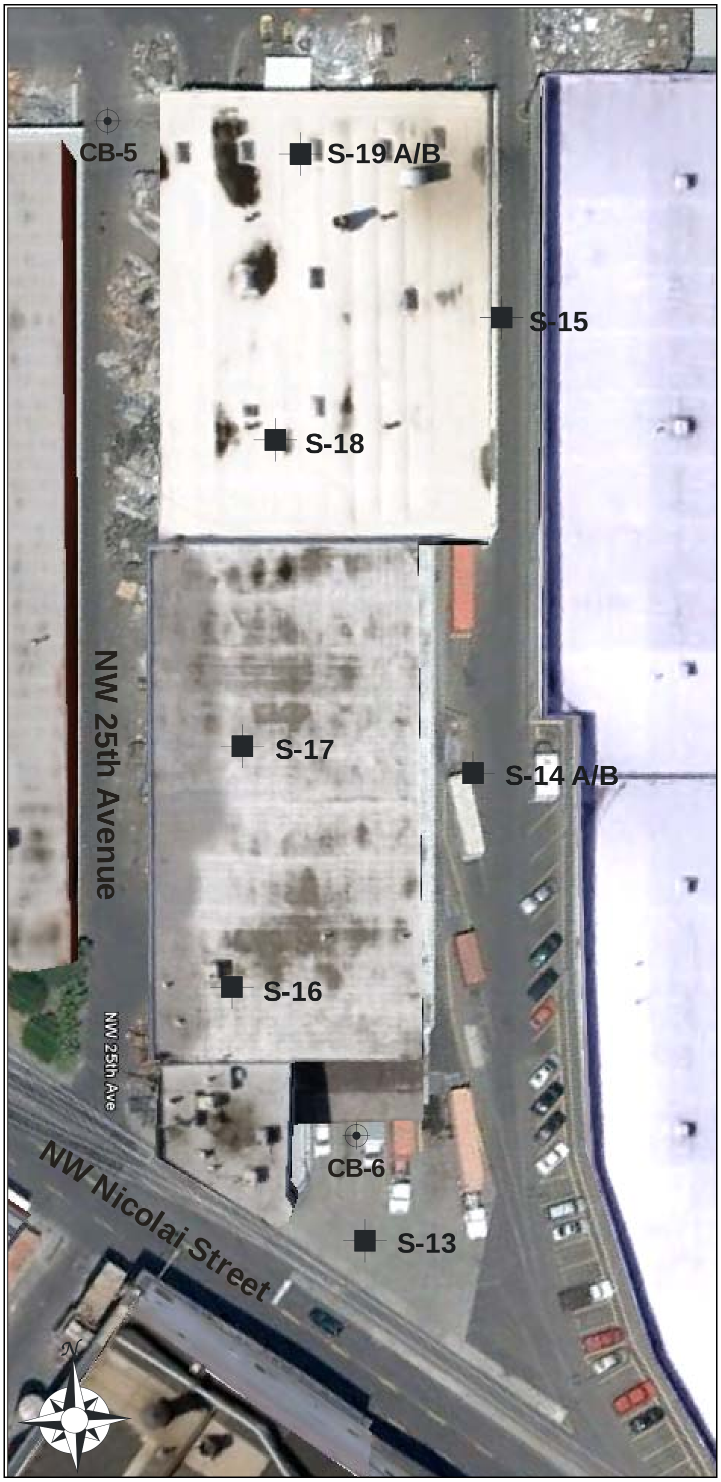

Figure 2 – Sample Locations Map

Inside building - view north

Sample S-13 location

Sample S-14 location

Sample S-15 location

Sample S-18 location

Sample S-19 location

Figure 3 – Photographs

APPENDIX A
LABORATORY REPORTS

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

January 18, 2010

Richard Kent
GeoPro Geologic Services
P.O. Box 26
Battle Ground, WA 98604

RE: Calbag Metals Stormwater Drains

Enclosed are the results of analyses for samples received by the laboratory on 01/04/10 13:17.
The following list is a summary of the Work Orders contained in this report, generated on 01/18/10 16:26.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PTA0019	Calbag Metals Stormwater Dra	090812-C

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

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BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name: **Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number: 090812-C	Report Created:
Battle Ground, WA 98604	Project Manager: Richard Kent	01/18/10 16:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-13 cement/concrete	PTA0019-01	Soil	12/31/09 09:55	01/04/10 13:17
S-14A asphalt	PTA0019-02	Soil	12/31/09 10:02	01/04/10 13:17
S-14B asphalt	PTA0019-03	Soil	12/31/09 10:02	01/04/10 13:17
S-15 asphalt	PTA0019-04	Soil	12/31/09 10:20	01/04/10 13:17
S-16 cement/concrete	PTA0019-05	Soil	12/31/09 08:50	01/04/10 13:17
S-17 cement/concrete	PTA0019-06	Soil	12/31/09 09:05	01/04/10 13:17
S-18 cement/concrete	PTA0019-07	Soil	12/31/09 09:22	01/04/10 13:17
S-19A cement/concrete	PTA0019-08	Soil	12/31/09 09:35	01/04/10 13:17
S-19B cement/concrete	PTA0019-09	Soil	12/31/09 09:35	01/04/10 13:17

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	090812-C	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	01/18/10 16:26

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTA0019-01 (S-13 cement/concrete)			**Soil**			**Sampled: 12/31/09 09:55**				
Aroclor 1016	EPA 8082	ND	-----	3.86	ug/kg dry	1x	10A0051	01/05/10 14:10	01/14/10 12:14	
Aroclor 1221	"	ND	-----	7.76	"	"	"	"	"	
Aroclor 1232	"	ND	-----	3.86	"	"	"	"	"	
Aroclor 1242	"	**9.44**	-----	3.86	"	"	"	"	"	A-01
Aroclor 1248	"	ND	-----	3.86	"	"	"	"	"	
Aroclor 1254	"	**20.8**	-----	3.86	"	"	"	"	"	A-01
Aroclor 1260	"	**10.8**	-----	3.86	"	"	"	"	"	A-01
Aroclor 1262	"	ND	-----	3.86	"	"	"	"	"	
Aroclor 1268	"	ND	-----	3.86	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*58.6%*		*16 - 149 %*			*"*	
PTA0019-02 (S-14A asphalt)			**Soil**			**Sampled: 12/31/09 10:02**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	13.9	ug/kg dry	2x	10A0051	01/05/10 14:10	01/14/10 12:36	
Aroclor 1221	"	ND	-----	27.9	"	"	"	"	"	
Aroclor 1232	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1242	"	**58.6**	-----	13.9	"	"	"	"	"	A-01
Aroclor 1248	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1254	"	**62.8**	-----	13.9	"	"	"	"	"	A-01
Aroclor 1260	"	**21.6**	-----	13.9	"	"	"	"	"	A-01
Aroclor 1262	"	ND	-----	13.9	"	"	"	"	"	
Aroclor 1268	"	ND	-----	13.9	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*54.1%*		*16 - 149 %*			*"*	
PTA0019-03 (S-14B asphalt)			**Soil**			**Sampled: 12/31/09 10:02**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	14.1	ug/kg dry	2x	10A0051	01/05/10 14:10	01/14/10 12:58	
Aroclor 1221	"	ND	-----	28.3	"	"	"	"	"	
Aroclor 1232	"	ND	-----	14.1	"	"	"	"	"	
Aroclor 1242	"	**43.2**	-----	14.1	"	"	"	"	"	A-01
Aroclor 1248	"	ND	-----	14.1	"	"	"	"	"	
Aroclor 1254	"	**69.6**	-----	14.1	"	"	"	"	"	A-01
Aroclor 1260	"	**21.6**	-----	14.1	"	"	"	"	"	A-01
Aroclor 1262	"	ND	-----	14.1	"	"	"	"	"	
Aroclor 1268	"	ND	-----	14.1	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*58.6%*		*16 - 149 %*			*"*	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	090812-C	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	01/18/10 16:26

Polychlorinated Biphenyls per EPA Method 8082
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTA0019-04 (S-15 asphalt)			**Soil**			**Sampled: 12/31/09 10:20**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	7.02	ug/kg dry	1x	10A0051	01/05/10 14:10	01/14/10 13:20	
Aroclor 1221	"	ND	-----	14.1	"	"	"	"	"	
Aroclor 1232	"	ND	-----	7.02	"	"	"	"	"	
Aroclor 1242	"	**28.8**	-----	7.02	"	"	"	"	"	**A-01**
Aroclor 1248	"	ND	-----	7.02	"	"	"	"	"	
Aroclor 1254	"	**33.9**	-----	7.02	"	"	"	"	"	**A-01**
Aroclor 1260	"	**12.6**	-----	7.02	"	"	"	"	"	**A-01**
Aroclor 1262	"	ND	-----	7.02	"	"	"	"	"	
Aroclor 1268	"	ND	-----	7.02	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*58.5%*		*16 - 149 %*			*"*	
PTA0019-05 (S-16 cement/concrete)			**Soil**			**Sampled: 12/31/09 08:50**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	138	ug/kg dry	20x	10A0051	01/05/10 14:10	01/14/10 13:44	
Aroclor 1221	"	ND	-----	277	"	"	"	"	"	
Aroclor 1232	"	ND	-----	138	"	"	"	"	"	
Aroclor 1242	"	**1300**	-----	138	"	"	"	"	"	**A-01**
Aroclor 1248	"	ND	-----	138	"	"	"	"	"	
Aroclor 1254	"	**685**	-----	138	"	"	"	"	"	**A-01**
Aroclor 1260	"	**217**	-----	138	"	"	"	"	"	**A-01**
Aroclor 1262	"	ND	-----	138	"	"	"	"	"	
Aroclor 1268	"	ND	-----	138	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*16 - 149 %*			*"*	***Z3***
PTA0019-06 (S-17 cement/concrete)			**Soil**			**Sampled: 12/31/09 09:05**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	69.4	ug/kg dry	20x	10A0051	01/05/10 14:10	01/14/10 14:06	
Aroclor 1221	"	ND	-----	140	"	"	"	"	"	
Aroclor 1232	"	ND	-----	69.4	"	"	"	"	"	
Aroclor 1242	"	**787**	-----	69.4	"	"	"	"	"	**A-01**
Aroclor 1248	"	ND	-----	69.4	"	"	"	"	"	
Aroclor 1254	"	**545**	-----	69.4	"	"	"	"	"	**A-01**
Aroclor 1260	"	**167**	-----	69.4	"	"	"	"	"	**A-01**
Aroclor 1262	"	ND	-----	69.4	"	"	"	"	"	
Aroclor 1268	"	ND	-----	69.4	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*16 - 149 %*			*"*	***Z3***

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name: **Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number: 090812-C	Report Created:
Battle Ground, WA 98604	Project Manager: Richard Kent	01/18/10 16:26

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTA0019-07 (S-18 cement/concrete)			**Soil**			**Sampled: 12/31/09 09:22**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	140	ug/kg dry	40x	10A0051	01/05/10 14:10	01/14/10 14:28	
Aroclor 1221	"	ND	-----	282	"	"	"	"	"	
Aroclor 1232	"	ND	-----	140	"	"	"	"	"	
Aroclor 1242	"	**1560**	-----	140	"	"	"	"	"	**A-01**
Aroclor 1248	"	ND	-----	140	"	"	"	"	"	
Aroclor 1254	"	**961**	-----	140	"	"	"	"	"	**A-01**
Aroclor 1260	"	**278**	-----	140	"	"	"	"	"	**A-01**
Aroclor 1262	"	ND	-----	140	"	"	"	"	"	
Aroclor 1268	"	ND	-----	140	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*16 - 149 %*			*"*	***Z3***
PTA0019-08 (S-19A cement/concrete)			**Soil**			**Sampled: 12/31/09 09:35**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	70.1	ug/kg dry	20x	10A0051	01/05/10 14:10	01/14/10 17:21	
Aroclor 1221	"	ND	-----	141	"	"	"	"	"	
Aroclor 1232	"	ND	-----	70.1	"	"	"	"	"	
Aroclor 1242	"	**756**	-----	70.1	"	"	"	"	"	**A-01**
Aroclor 1248	"	ND	-----	70.1	"	"	"	"	"	
Aroclor 1254	"	**273**	-----	70.1	"	"	"	"	"	**A-01**
Aroclor 1260	"	**78.0**	-----	70.1	"	"	"	"	"	**A-01**
Aroclor 1262	"	ND	-----	70.1	"	"	"	"	"	
Aroclor 1268	"	ND	-----	70.1	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*16 - 149 %*			*"*	***Z3***
PTA0019-09 (S-19B cement/concrete)			**Soil**			**Sampled: 12/31/09 09:35**				**RL7**
Aroclor 1016	EPA 8082	ND	-----	139	ug/kg dry	40x	10A0051	01/05/10 14:10	01/14/10 17:43	
Aroclor 1221	"	ND	-----	279	"	"	"	"	"	
Aroclor 1232	"	ND	-----	139	"	"	"	"	"	
Aroclor 1242	"	**901**	-----	139	"	"	"	"	"	**A-01**
Aroclor 1248	"	ND	-----	139	"	"	"	"	"	
Aroclor 1254	"	**349**	-----	139	"	"	"	"	"	**A-01**
Aroclor 1260	"	ND	-----	139	"	"	"	"	"	**A-01**
Aroclor 1262	"	ND	-----	139	"	"	"	"	"	
Aroclor 1268	"	ND	-----	139	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*16 - 149 %*			*"*	***Z3***

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Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	090812-C	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	01/18/10 16:26

Percent Dry Weight (Solids) per ASTM D2216-80

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTA0019-01 (S-13 cement/concrete)			**Soil**			**Sampled: 12/31/09 09:55**				
% Solids	NCA SOP	**86.1**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-02 (S-14A asphalt)			**Soil**			**Sampled: 12/31/09 10:02**				
% Solids	NCA SOP	**95.4**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-03 (S-14B asphalt)			**Soil**			**Sampled: 12/31/09 10:02**				
% Solids	NCA SOP	**94.7**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-04 (S-15 asphalt)			**Soil**			**Sampled: 12/31/09 10:20**				
% Solids	NCA SOP	**94.7**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-05 (S-16 cement/concrete)			**Soil**			**Sampled: 12/31/09 08:50**				
% Solids	NCA SOP	**96.3**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-06 (S-17 cement/concrete)			**Soil**			**Sampled: 12/31/09 09:05**				
% Solids	NCA SOP	**95.2**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-07 (S-18 cement/concrete)			**Soil**			**Sampled: 12/31/09 09:22**				
% Solids	NCA SOP	**94.7**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-08 (S-19A cement/concrete)			**Soil**			**Sampled: 12/31/09 09:35**				
% Solids	NCA SOP	**95.0**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	
PTA0019-09 (S-19B cement/concrete)			**Soil**			**Sampled: 12/31/09 09:35**				
% Solids	NCA SOP	**95.9**	-----	0.0100	% by Weight	1x	10A0003	01/04/10 08:38	01/04/10 08:38	

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Estella K Rieben

Estella Rieben, Project Manager

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ph: (503) 906.9200 fax: (503) 906.9210

GeoPro Geologic Services	Project Name:	Calbag Metals Stormwater Drains	
P.O. Box 26	Project Number:	090812-C	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	01/18/10 16:26

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10A0051 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10A0051-BLK1)								**Extracted: 01/05/10 14:10**						
Aroclor 1016	EPA 8082	ND	---	3.30	ug/kg wet	1x	--	--	--	--	--	--	01/14/10 15:12	
Aroclor 1221	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	3.30	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 48.2%*		*Limits: 16-149%*									*01/14/10 15:12*	
LCS (10A0051-BS1)								**Extracted: 01/05/10 14:10**						MNR
Aroclor 1016	EPA 8082	24.8	---	3.33	ug/kg wet	1x	--	33.3	74.3%	(57-135)	--	--	01/14/10 15:34	
Aroclor 1260	"	25.2	---	3.33	"	"	--	"	75.5%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 54.3%*		*Limits: 16-149%*									*01/14/10 15:34*	

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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	090812-C	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	01/18/10 16:26

Percent Dry Weight (Solids) per ASTM D2216-80 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10A0003 **Soil Preparation Method: Dry Weight**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (10A0003-DUP1)				**QC Source: PSL0976-01**				**Extracted: 01/04/10 08:38**						
% Solids	NCA SOP	75.2	---	0.0100	% by Weight	1x	75.0	--	--	--	0.266%	(20)	01/04/10 08:38	
Duplicate (10A0003-DUP2)				**QC Source: PSL0976-02**				**Extracted: 01/04/10 08:38**						
% Solids	NCA SOP	73.8	---	0.0100	% by Weight	1x	73.6	--	--	--	0.271%	(20)	01/04/10 08:38	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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GeoPro Geologic Services	Project Name:	**Calbag Metals Stormwater Drains**	
P.O. Box 26	Project Number:	090812-C	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	01/18/10 16:26

Notes and Definitions

Report Specific Notes:

- A-01 - Due to the presence of overlapping Aroclor patterns, the PCBs in the sample do not closely match the Aroclor standards used to calibrate the instruments. Affected peaks were removed from the instrument calibration in an attempt to minimize bias.
- MNR - No results were reported for the MS/MSD. The sample used for the MS/MSD required dilution due to the sample matrix. Because of this, the spike compounds were diluted below the detection limit.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- RL7 - Sample required dilution due to high concentrations of target analyte.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210 X
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTA0019

CLIENT:
REPORT TO: GeoPro Geologic Services LLC
ADDRESS: PO Box 26
Battle Ground WA 98604
PHONE: 3606661465 ~~FAX:~~ geopro@comcast.net
PROJECT NAME: Calbag Metals Co.
PROJECT NUMBER: 090812-C
SAMPLED BY: Richard Kent /

INVOICE TO: GeoPro Geologic Services LLC
PO Box 26
Battle Ground, WA 98604
P.O. NUMBER:

PRESERVATIVE: none

REQUESTED ANALYSES: 8082 PCB (*) per Portland Harbor Joint Source Control Strategy Screening Level Values for stormwater pathway

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: X 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	8082 PCB (*)	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	S-13	12/31/09 0955	↓	S	1	cement/concrete	
2	S-14A	12/31/09 1002	↓	S	1	asphalt	
3	S-14B	12/31/09 1002	↓	S	1	asphalt	
4	S-15	12/31/09 1020	↓	S	1	asphalt	
5	S-16	12/31/09 0850	↓	S	1	cement/concrete	
6	S-17	12/31/09 0905	↓	S	1	cement/concrete	
7	S-18	12/31/09 0922	↓	S	1	cement/concrete	
8	S-19A	12/31/09 0935	↓	S	1	cement/concrete	
9	S-19B	12/31/09 0935	↓	S	1	cement/concrete	
10							

(*) Aroclor 1016, 1221, 1232, 1242, 1248, 1254 and 1260

RELEASED BY: [signature] PRINT NAME: Richard Kent FIRM: GeoPro LLC DATE: 1/4/10 TIME: 1317
RECEIVED BY: [signature] PRINT NAME: FIRM: TAP DATE: 1/4/10 TIME: 1317
RELEASED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: pls call if SLV's are not met

TEMP: 12.1 PAGE 1 OF 1

TAL-1000(0408)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTA0019 Date/Time Received: 1/4/10 1317
Client Name and Project: GeoPro Geologic - Calbag Metals

Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☒PDT/PST ☐AK ☐OTHER

Unpacking Checks:

Cooler #(s): 1
Temperatures: 12.1
Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☐Plastic ☒Glass)

Temperature out of Range:
__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other:____________

Initials: PS

N/A	Yes	No	
☒	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☒	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☒	☐	3. Chain of Custody present? If no, document on NOD.
	☒	☐	4. Bottles received intact? If no, document on NOD.
	☒	☐	5. Sample is not multiphasic? If no, document on NOD.
	☒	☐	6. Proper Container and preservatives used? If no, document on NOD.
☒	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☒	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☒	☐	☐	9. HF Dilution required?
	☒	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☒	☐	11. Did chain of custody agree with samples received? If no, document on NOD.
	☒	☐	12. Is the "Sampled by" section of the COC completed?
☒	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☒	☐	☐	14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
	☐	☒	15. Did samples require preservation with sodium thiosulfate?
☒	☐	☐	16. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☒	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☒	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☒	☐	☐	19. Are analyses with short holding times received in hold?
	☒	☐	20. Was Standard Turn Around (TAT) requested?
	☒	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

F:\Sample_Receiving\Receiving_Documents\Forms (effective 3/16/09)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTA0019

Login Checks:

Initials: [illegible]

N/A	Yes	No	
☐	☒	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☒	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☒	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☒	☐	☐	25. Were special log in instructions read and followed?
	☒	☐	26. Were tests logged checked against the COC?
☒	☐	☐	27. Were rush notices printed and delivered?
☒	☐	☐	28. Were short hold notices printed and delivered?
☒	☐	☐	29. Were subcontract COCs printed?
☒	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: [illegible]

N/A	Yes	No	
☒	☐	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☒	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☒	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☒	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☒	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☒	☐	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

APPENDIX B
FIELD LOGS

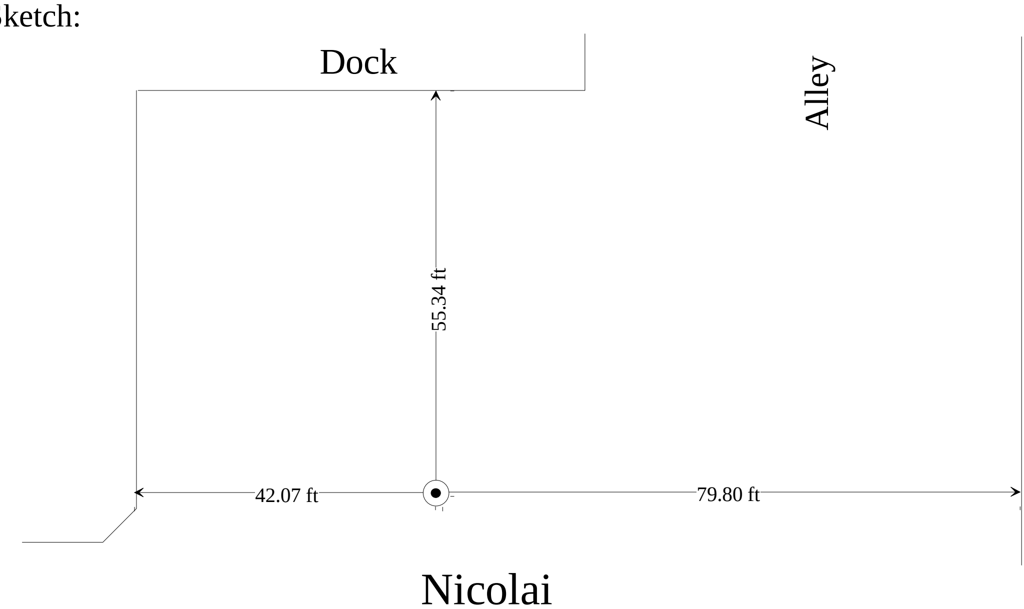
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

CEMENT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Outside in front of loading bay	**SAMPLE NUMBER: S- 13**
GPS Coordinates: na	
Time Sample Collected: 0955	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatic hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: lt gray
Sample texture: na	Sample Odor: cement/concrete

Location Sketch:



Sample Collection Method:
Non-dedicated collection devices were decontaminated between sampling locations.
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs per Portland Harbor criteria
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: ______________________________

PRINT NAME: R Kent	SIGNATURE:

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

ASPHALT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☒W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Alley east of main bldg	**SAMPLE NUMBER: S-14 A/B**
GPS Coordinates: na	
Time Sample Collected: 1002	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatic hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: dk gray-blk
Sample texture: na	Sample Odor: asphaltic

Location Sketch:

Sample Collection Method:
Non-dedicated collection devices were decontaminated between sampling locations.
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs per Portland Harbor criteria
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: ____________________

PRINT NAME: R Kent	SIGNATURE: [signature]

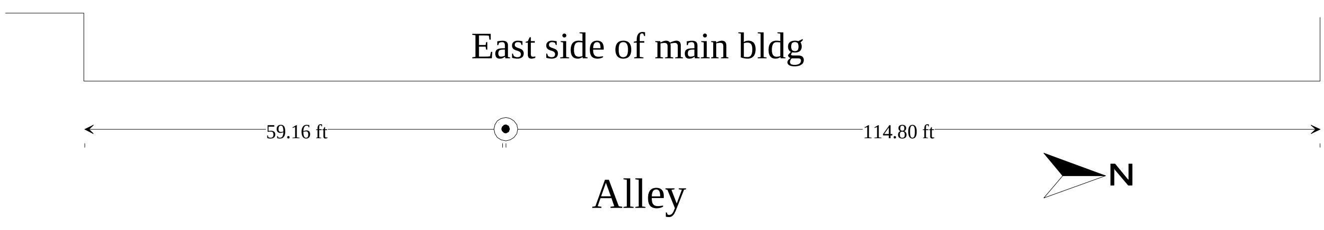
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

ASPHALT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Alley east of main bldg	**SAMPLE NUMBER: S-15**
GPS Coordinates: na	
Time Sample Collected: 1020	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatic hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: dk gray-blk
Sample texture: na	Sample Odor: asphaltic

Location Sketch:



Sample Collection Method:
Non-dedicated collection devices were decontaminated between sampling locations.
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs per Portland Harbor criteria
Laboratory Name (and COC No. if available): TestAmerica, Beaverton, OR

Comments: ______________________________

PRINT NAME: R Kent	SIGNATURE: [signature]

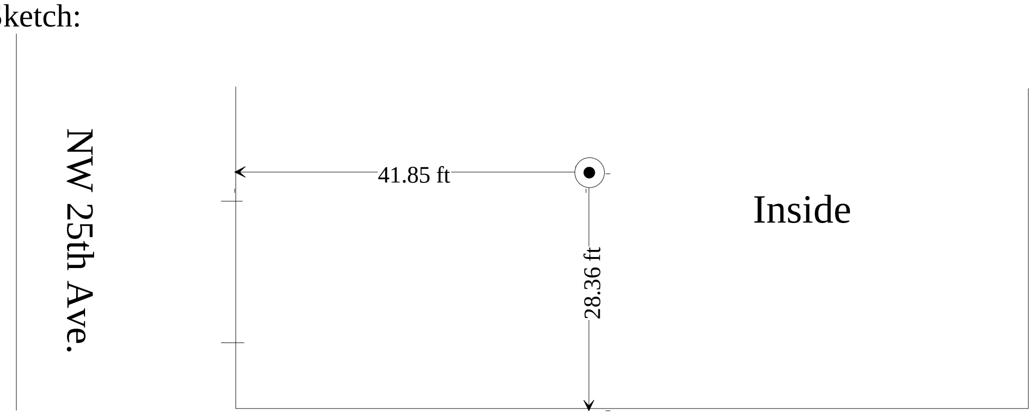
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

CEMENT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Within building	**SAMPLE NUMBER: S-16**
GPS Coordinates: na	
Time Sample Collected: 0850	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatic hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: lt gray
Sample texture: na	Sample Odor: none

Location Sketch:



Sample Collection Method:
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs Joint Source Control Strategy (JSCS) Screening Level Values (“SLV”s)
Laboratory Name: TestAmerica, Beaverton, OR

Comments: ____________________

PRINT NAME: R Kent	SIGNATURE:

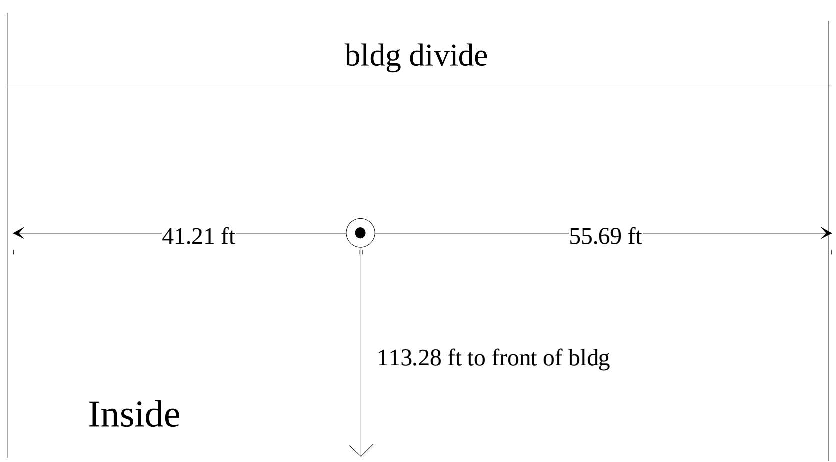
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

CEMENT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Within building	**SAMPLE NUMBER: S-17**
GPS Coordinates: na	
Time Sample Collected: 0905	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatic hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: lt gray
Sample texture: na	Sample Odor: none

Location Sketch:



Sample Collection Method:
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s)
Laboratory Name: TestAmerica, Beaverton, OR

Comments: ______________________________

PRINT NAME: R Kent

SIGNATURE: [signature]

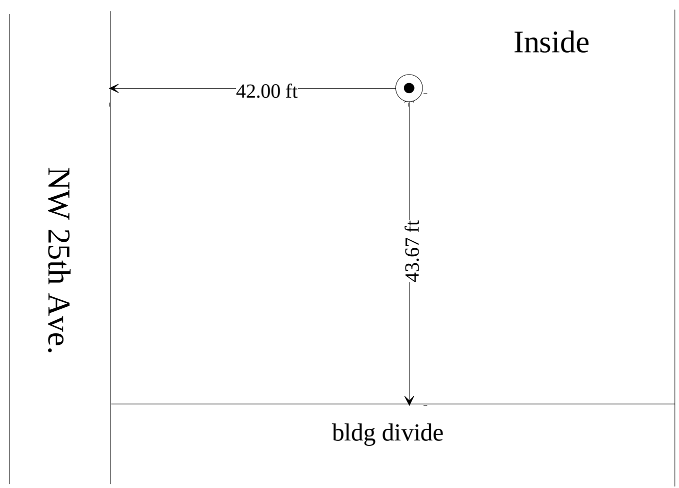
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

CEMENT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Within building	**SAMPLE NUMBER: S-18**
GPS Coordinates: na	
Time Sample Collected: 0922	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatric hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: lt gray
Sample texture: na	Sample Odor: none

Location Sketch:



Sample Collection Method:
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s)
Laboratory Name: TestAmerica, Beaverton, OR

Comments: ________________________________

PRINT NAME: R Kent	SIGNATURE:

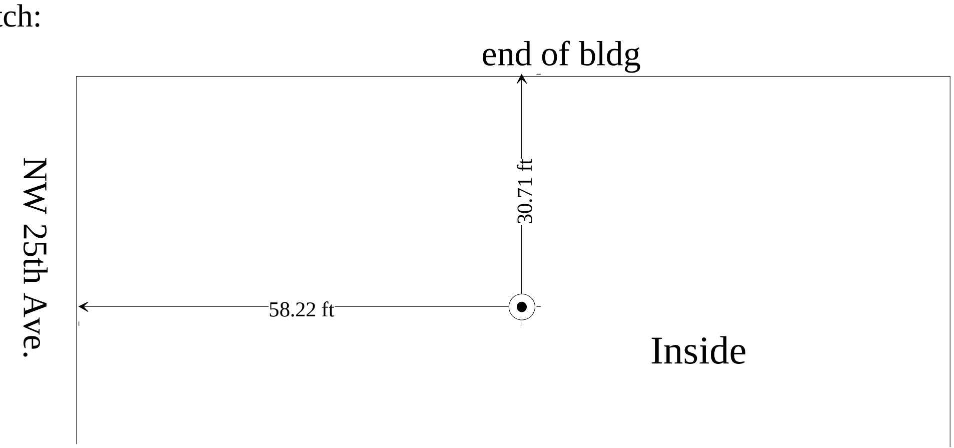
GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

CEMENT SAMPLE FIELD LOG

DAY/DATE: December 31, 2009	SHEET 1 of 1
PROJECT NAME: Calbag Stormwater Source Investigation	PROJECT NO.: 090812-C
PROJECT LOCATION: 2495 NW Nicolai St, Portland OR	
Weather: ☐Fair ☐Overcast ☐Fog ☒Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☐50-74 ☒>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from: ☐N ☐NE ☐E ☐SE ☐S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☒Moderate ☐Heavy

LOCATION: Within building	**SAMPLE NUMBER: S-19 A/B**
GPS Coordinates: na	
Time Sample Collected: 0935	☐ Composite __:__ ☒ Discrete
Collection device: ☐ Spoon/Scoop ☐ Corer ☒ Other: electric pneumatic hammer chisel	Sample depth(s): 0.0-0.25 inches
Water above sample: na ☐ Sheen	Sample Color: lt gray
Sample texture: na	Sample Odor: none

Location Sketch:



Sample Collection Method:
New latex gloves were used during sample collection.
Samples were placed in 4-ounce glass jars with Teflon lids. The jars were placed in an ice chest with blu-ice for transport to the laboratory.

Analysis Requested: PCBs Joint Source Control Strategy (JSCS) Screening Level Values ("SLV"s)
Laboratory Name: TestAmerica, Beaverton, OR

Comments: ______

PRINT NAME: R Kent

SIGNATURE: Richard C. Kent

Appendix I
PCB Surface Washing Pilot Study Report
2495 NW Nicolai Street, September 2010

PCB SURFACE WASHING PILOT STUDY

CALBAG METALS CO. FACILITY

2495 NW NICOLAI STREET
PORTLAND, OREGON

Prepared for:
Oregon Department of Environmental Quality
Northwest Region
2020 SW 4th Avenue
Portland, Oregon 97201

September 2010

Prepared by
GeoPro LLC
PO Box 26
Battle Ground, WA 98604
(360) 666-1465
geoprollc.com

GGS

Contents

<u>Figures</u>

<u>Appendices</u>

1 INTRODUCTION

1.1 Purpose

This Surface Washing Pilot Study was completed pursuant to a request by the State of Oregon Department of Environmental Quality (DEQ) to perform a pilot study of surface washing methods and confirmatory sampling of asphalt and concrete surfaces that contain elevated concentrations of polychlorinated biphenyls (PCBs).

The study was performed at 2495 NW Nicolai Street, Portland, Oregon (Site) which is operated by Calbag Metals Company (Calbag).

1.2 Landowner Contact

Mr. Chuck Gleason
Director of Operations
Calbag Metals Company
2495 NW Nicolai Street
P.O. Box 10067
Portland, Oregon 97296-0067
(503) 226-3441

1.3 Objectives

The following are specific objectives of the surface washing pilot study:

1. Collect sets of two discrete samples each from three test areas on the asphalt and concrete surfaces, one before and one after each test from near surface and shallow depth.
2. Wash asphalt and concrete test areas with three wash mixes: water, water and detergent, and water and surfactant.
3. Analyze each concrete and asphalt sample for PCBs (Aroclors).
4. Screen the analytical results against Joint Source Control Strategy (JSCS) Screening Level Values (SLVs).

2 BACKGROUND

The Site is located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1) which includes a building housing corporate offices, storage and a processing warehouse. The building covers 67,281 square feet and consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof. The Site also contains an open shed with a metal roof.

The Site is operated by Calbag, a nonferrous scrap metal company which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals generally include aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or PCBs. Fabrication does not occur at the Site.

2.1 Nature and Extent of Contamination

Several investigative events were conducted as part of the source control evaluation including onsite catch basin sediment sampling (May 2009), cleaning onsite catch basins (July 2009), roof sediment sampling for PCBs (July 2009), asphalt and soil sampling for PCBs (October 2009) and concrete and asphalt sampling for PCBs (December 2009). The historic source(s) of the detected PCBs is unknown.

3 FIELD TEST PROCEDURES

A total of six test areas were selected that contained PCBs above cleanup levels. Three proposed asphalt test areas in NW 25th Avenue were centered around previous sample location “S-2” and three concrete test areas within the building were centered around previous sample location “S-16” (see Figure 1). Three cleaning methods were tested including washing with water, washing with detergent, and washing with a commercial surfactant product. Each of the three cleaning methods was applied to one of the test areas for asphalt and for concrete.

The test areas were approximately 10 feet by 10 feet and separated from each other by about 5 feet (see Figure 2). The surface of each test area was cleared, brushed and cleaned with a vacuum. Once cleared of debris, and prior to conducting the pilot test, pre-test samples were collected. Each test area was then cleaned with one of the three cleaning methods and then was allowed to dry prior to post-test sampling.

All necessary permits were obtained verbally from Diana M. Book of the City of Portland, Transportation before work began and subsequently discussed with DEQ. Book provided verbal approval to proceed with the asphalt sampling in NW 25th Street, which is leased by Calbag from the City of Portland. Book did not make a visual inspection of the asphalt patches after the work was completed.

3.1 Water Cleaning Method

Cleaning of the first each asphalt and concrete areas was accomplished using water under moderate pressure obtained from a spigot at the Calbag building. All cleaning water was contained during the cleaning process. The wash water was collected in a 55-gallon drum for disposal.

3.2 Water and Detergent Cleaning Method

Cleaning of the second each asphalt and concrete areas was accomplished with a mixture of water and detergent (Spic ‘n Span) applied under moderate pressure. All cleaning water was contained during the cleaning process and collected in a 55-gallon drum for disposal.

3.3 Surfactant Cleaning Method

Cleaning of the third each asphalt and concrete areas was treated with CAPSUR®, a patented, aqueous-based solvent with emulsifiers developed for the clean-up of PCBs. The CAPSUR® was mixed with water according to the manufacturer's directions. All resulting wash liquid in the 55-gallon drum was contained and managed, tested and disposed offsite in compliance with applicable materials specifications and hazardous waste requirements.

3.4 Sampling Technique

A total of 24 primary samples, and 8 duplicate samples, were collected for analysis. Two pre-test and two post-test samples were collected at each of the three asphalt test areas. Pre-test and post-test samples were taken at depths of 0 to 1 inch and at 1.5 inches. Two pre-test and two post-test samples were collected at depths of 0 to 1 inch and at 3 inches in the water and detergent concrete test areas. Two samples, and two duplicate samples, each at 1 and 3 inch depths, were collected in the Capsur concrete test areas. Post-wash samples were collected adjacent to the pre-wash sample locations. Samples at 1 inch represent the surface to 1 inch depth.

Prior to collecting asphalt samples, the roadway was cut with a diamond saw into grids to break up the hardened asphalt. Samples were then collected using a clean chisel at designated depths and placed in new 8-ounce glass jars furnished by the laboratory. New latex gloves were used to collect each sample. The saw blade was cleaned with water between cuts. Surface samples from concrete were collected from grid cuts made with a diamond saw and clean chisels. Samples were collected at 3 inches depth below the concrete floor surface using a concrete core drill which was cleaned with water between holes.

Each core was then crushed with a clean hammer and the material placed in new 8-ounce glass jars furnished by the laboratory. New latex gloves were used to collect all samples. Post-wash samples were collected adjacent to the pre-wash sample locations. All asphalt and concrete samples were unpreserved and placed in an ice chest with blu-ice to maintain the samples at 4°C for shipment.

4 ANALYTICAL METHODS and RESULTS

According to EPA SW 846 Method 8082, the most common contaminant as 'PCB' was manufactured by Monsanto under the trade name Aroclor. The analysis method reports PCBs as Aroclors or congeners. There are approximately 54 manufacturers of PCB using about 26 trade names. Laboratory analysis of polychlorinated biphenyls as Aroclors was completed for the asphalt and concrete samples using EPA Method 8082 PCBs by gas chromatography. SW846 is the EPA document "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

All samples were analyzed by TestAmerica, Beaverton, Oregon with attempts to analyze material using detection limits at or below 10 ppb, as requested by DEQ. The laboratory could not obtain the detection limits in many samples due to clogging of the instruments while attempting to achieve the extremely low JSCS cleanup levels (see "Problems Encountered" in the laboratory report).

Additional cleanup of samples were attempted. The laboratory data results and DEQ requested analysis package are included in Appendix A.

4.1 Sample Documentation and Handling Procedures

Each sample obtained during the field investigation was assigned a unique identification number that was used on all field records and laboratory sample container labels. A complete record of field activities was maintained using the following methods to meet the QA objectives for this project: daily field log, field sampling forms, sample container labels, and chain-of-custody forms.

4.2 Test Derived Waste Handling Procedures

The rinsate water resulting from testing was collected by vacuuming, placed in a 55-gallon drum for temporary on-site storage, pending analytical results and disposal profiling. The wash water (sample "W-1") was tested for PCBs per EPA Method 8082, TCLP Metals per EPA 1311/6000/7000 Series Methods and TCLP mercury per EPA Methods 1311/7470A. The wash water was disposed offsite by Terra Hydr Inc., Portland, OR. The following is a tabulation of the wash water TCLP metal concentrations. Detected wash water PCBs are listed in Table 1.

	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	pH	TLCP Extraction
W-1 mg/l	ND<0.100	**0.393**	ND<0.100	ND<0.200	**1.58**	**0.130**	ND<0.100	ND<0.0800	**10.9**	ND<1.0

4.3 Data Evaluation

Analytical data resulting from sample analyses is summarized and tabulated in Table 1 and graphically summarized in Figure 3. Only Aroclors 1242 and 1254 were detected in asphalt and concrete samples. The criteria used for evaluation of the test data include JSCS SLV soil/stormwater sediment toxicity criteria[1] of 676 μg/kg for total PCBs and 300 μg/kg for Aroclor 1254. There is not a JSCS SLV for Aroclor 1242. DEQ requested a PCB method detection limit of 10 μg/kg for total PCBs.

[1] Portland Harbor Joint Source Control Strategy, Table 3-1, Dec. 2005, July 2007 revision

The highest concentration of PCBs detected was in a pre-test water and detergent concrete sample for Aroclor 1254 at 628 µg/kg in sample CS-5. The lowest concentration of PCBs detected in a pre-test Capsur concrete sample for Aroclor 1254 at 5.18 µg/kg in sample CS-11 (see Table 1). The following concrete samples exceeded the JSCS SLV for soil/stormwater sediment toxicity for Aroclor 1254 of 300 µg/kg:

sample	media	cleanup media	depth	test	Aroclor	analytical result
CS-3	concrete	water	0-1”	post	1254	400 µg/kg
CS-5	concrete	spicNspan	0-1”	pre	1254	628 µg/kg
CS-7	concrete	spicNspan	0-1”	post	1254	353 µg/kg
CS-9	concrete	Capsur	0-1”	pre	1254	355 µg/kg
CS-10 duplicate CS-9	concrete	Capsur	0-1”	pre	1254	333 µg/kg
CS-13	concrete	Capsur	0-1”	post	1254	387 µg/kg

Detection limits achieved for the asphalt and concrete analyses were generally below about 66 µg/kg, with only a small percentage between 100 to 134 µg/kg, and also a small percentage below about 7 µg/kg. While most detection limits achieved were not below the DEQ-requested 10 µg/kg, all were well below the JSCS screening criteria for soil/stormwater sediment toxicity.

	Cleanup Method	Sample Depth	Aroclor 1016 Pre-Test	Aroclor 1016 Post-Test	Aroclor 1221 Pre-Test	Aroclor 1221 Post-Test	Aroclor 1232 Pre-Test	Aroclor 1232 Post-Test	Aroclor 1242 Pre-Test	Aroclor 1242 Post-Test	Aroclor 1248 Pre-Test	Aroclor 1248 Post-Test	Aroclor 1254 Pre-Test	Aroclor 1254 Post-Test	Aroclor 1260 Pre-Test	Aroclor 1260 Post-Test	Aroclor 1262 Pre-Test	Aroclor 1262 Post-Test	Aroclor 1268 Pre-Test	Aroclor 1268 Post-Test
			ug/kg	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*
ASPHALT																				
AS-1	Water	1”	ND<26.5		ND<53.3		ND<26.5		**164**		ND<26.5		**81.8**		ND<26.5		ND<26.5		ND<26.5	
AS-2	Water	1.5”	ND<26.5		ND<53.2		ND<26.5		ND<26.5		ND<26.5		**42.2**		ND<26.5		ND<26.5		ND<26.5	
AS-3	Water	1”		ND<52.3		ND<105		ND<52.3		**246**		ND<52.3		**165**		ND<52.3		ND<52.3		ND<52.3
AS-4	Water	1.5”		ND<26.6		ND<53.5		ND<26.6		ND<26.6		ND<26.6		**35.4**		ND<26.6		ND<26.6		ND<26.6
AS-5	Spic n Span	1”	ND<52.3		ND<105		ND<52.3		**214**		ND<52.3		**132**		ND<52.3		ND<52.3		ND<52.3	
AS-6	Spic n Span	1.5”	ND<26.6		ND<53.5		ND<26.6		ND<26.6		ND<26.6		**104**		ND<26.6		ND<26.6		ND<26.6	
AS-7	Spic n Span	1”		ND<66.6		ND<134		ND<66.6		**331**		ND<66.6		**226**		ND<66.6		ND<66.6		ND<66.6
AS-8	Spic n Span	1.5”		ND<26		ND<52.3		ND<26		ND<26		ND<26		**91.8**		ND<26		ND<26		ND<26
AS-9	Capsur	1”	ND<65.9		ND<133		ND<65.9		**338**		ND<65.9		**249**		ND<65.9		ND<65.9		ND<65.9	
AS-10	Capsur Duplicate	1”	ND<66.3		ND<133		ND<66.3		**331**		ND<66.3		**222**		ND<66.3		ND<66.3		ND<66.3	
AS-11	Capsur	1.5”	ND<53.1		ND<107		ND<53.1		ND<53.1		ND<53.1		**69.5**		ND<53.1		ND<53.1		ND<53.1	
AS-12	Capsur Duplicate	1.5”	ND<53.1		ND<107		ND<53.1		ND<53.1		ND<53.1		**62.2**		ND<53.1		ND<53.1		ND<53.1	
AS-13	Capsur	1”		ND<65.4		ND<132		ND<65.4		**332**		ND<65.4		**245**		ND<65.4		ND<65.4		ND<65.4
AS-14	Capsur Duplicate	1”		ND<65		ND<131		ND<65		**279**		ND<65		**196**		ND<65		ND<65		ND<65
AS-15	Capsur	1.5”		ND<26.6		ND<53.5		ND<26.6		ND<26.6		ND<26.6		**32.1**		ND<26.6		ND<26.6		ND<26.6
AS-16	Capsur Duplicate	1.5”		ND<26.3		ND<52.9		ND<26.3		ND<26.3		ND<26.3		**32.7**		ND<26.3		ND<26.3		ND<26.3
CONCRETE																				
CS-1	Water	1”	ND<66.4		ND<134		ND<66.4		**227**		ND<66.4		**200**		ND<66.4		ND<66.4		ND<66.4	
CS-2	Water	3”	ND<33.1		ND<66.6		ND<33.1		**50.6**		ND<33.1		**91.1**		ND<33.1		ND<33.1		ND<33.1	
CS-3	Water	1”		ND<66.3		ND<133		ND<66.3		**358**		ND<66.3		**400**		ND<66.3		ND<66.3		ND<66.3
CS-4	Water	3”		ND<66.6		ND<134		ND<66.6		**189**		ND<66.6		**294**		ND<66.6		ND<66.6		ND<66.6
CS-5	Spic n Span	1”	ND<66.2		ND<133		ND<66.2		**108**		ND<66.2		**628**		ND<66.2		ND<66.2		ND<66.2	
CS-6	Spic n Span	3”	ND<6.64		ND<13.4		ND<6.64		ND<6.64		ND<6.64		**43.7**		ND<6.64		ND<6.64		ND<6.64	
CS-7	Spic n Span	1”		ND<66.3		ND<133		ND<66.3		**98.4**		ND<66.3		**353**		ND<66.3		ND<66.3		ND<66.3
CS-8	Spic n Span	3”		ND<3.33		ND<6.69		ND<3.33		ND<3.33		ND<3.33		ND<3.33		ND<3.33		ND<3.33		ND<3.33
CS-9	Capsur	1”	ND<65.8		ND<132		ND<65.8		**224**		ND<65.8		**355**		ND<65.8		ND<65.8		ND<65.8	
CS-10	Capsur Duplcate	1”	ND<65.5		ND<132		ND<65.5		**264**		ND<65.5		**333**		ND<65.5		ND<65.5		ND<65.5	
CS-11	Capsur	3”	ND<3.31		ND<6.67		ND<3.31		**5.18**		ND<3.31		**13.3**		ND<3.31		ND<3.31		ND<3.31	
CS-12	Capsur Duplicate	3”	ND<3.31		ND<6.65		ND<3.31		**11**		ND<3.31		**28.8**		ND<3.31		ND<3.31		ND<3.31	
CS-13	Capsur	1”		ND<66.2		ND<133		ND<66.2		**354**		ND<66.2		**387**		ND<66.2		ND<66.2		ND<66.2
CS-14	Capsur Duplicate	1”		ND<66.5		ND<134		ND<66.5		**210**		ND<66.5		**233**		ND<66.5		ND<66.5		ND<66.5
CS-15	Capsur	3”		ND<3.28		ND<6.59		ND<3.28		**9.02**		ND<3.28		**14.9**		ND<3.28		ND<3.28		ND<3.28
CS-16	Capsur Duplicate	3”		ND<3.28		ND<6.59		ND<3.28		**10.9**		ND<3.28		**18.4**		ND<3.28		ND<3.28		ND<3.28
WASH WATER																				
W-1			ND<1.9		ND<3.81		ND<1.9		**11.3**		ND<1.9		**5**		ND<1.9		n/a		n/a	

Table 1 – Analytical Results

5 CONCLUSIONS

Six individual sample analyses exceeded the Portland Harbor JSCS SLV for upland soil/stormwater sediment toxicity of 300 µg/kg for Aroclor 1254. These include three pre-test samples that range in concentration from 333 to 628 µg/kg, and three post-test samples that range from 353 to 400 µg/kg. Three individual sample analyses exceeded the JSCS SLV of 676 µg/kg for total PCBs. These include three post-test samples that range in concentration from 736 to 758 µg/kg. There is not a JSCS SLV for Aroclor 1242, the only other Aroclor detected in the samples.

Washing the surfaces of asphalt and concrete with water generally did not reduce the concentrations of PCBs. In the water washing method, the PCB concentrations decreased only in one sample of asphalt at 1.5 inches depth.

Washing the surface of the asphalt test area with a water and detergent mixture produced indeterminate results. The PCB concentrations at the surface appear to increase and the PCB concentrations at 1.5 inch depth appear to decrease. For the concrete surface, the PCB concentrations appear to slightly decrease at the surface and at 3 inches depth.

Washing the surface of the asphalt test area with the Capsur appeared to reduce the PCB concentrations at both the 0 to 1 and 1.5 inch depths. Washing the surface of the concrete test area produced indeterminate results with some results appearing to increase in the post-test samples and other appearing to decrease.

Some aspects of the pilot test may have affected the results of the pre-test and post-test sample analyses. One sample location was selected for each of the test areas where a surface and slightly deeper sample was obtained. It is possible that the washing liquid for the all of the test methods was not able to penetrate the asphalt and concrete surfaces within the time period of the test and therefore may not have affected the asphalt or concrete layers to any significant depth. As with soil, heterogeneity would be expected between sampling locations therefore some of the changes in concentration may be the result of horizontal and vertical variation in concentration between where pre-test and post-test samples were collected, and not the result of "cleaning" of the asphalt or concrete surfaces.

Capsur may be somewhat affective in the case of the asphalt surface; however the cost of the product may outweigh the minimal decrease in overall PCB concentration.

6 LIMITATIONS

This report has been prepared for use by the Oregon Department of Environmental Quality and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Oregon Department of Environmental Quality should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

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Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of work by others. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. GeoPro LLC is not responsible for references to regulatory terms, practices, numeric data, practices or conditions that may lead to other conclusions if such references are not in final form.

Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understood that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques, does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not been discovered at the time of this report or in the future. This report should not be construed as presenting a value to either the Site or the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

Respectfully submitted,

Richard C. Kent, R.G.

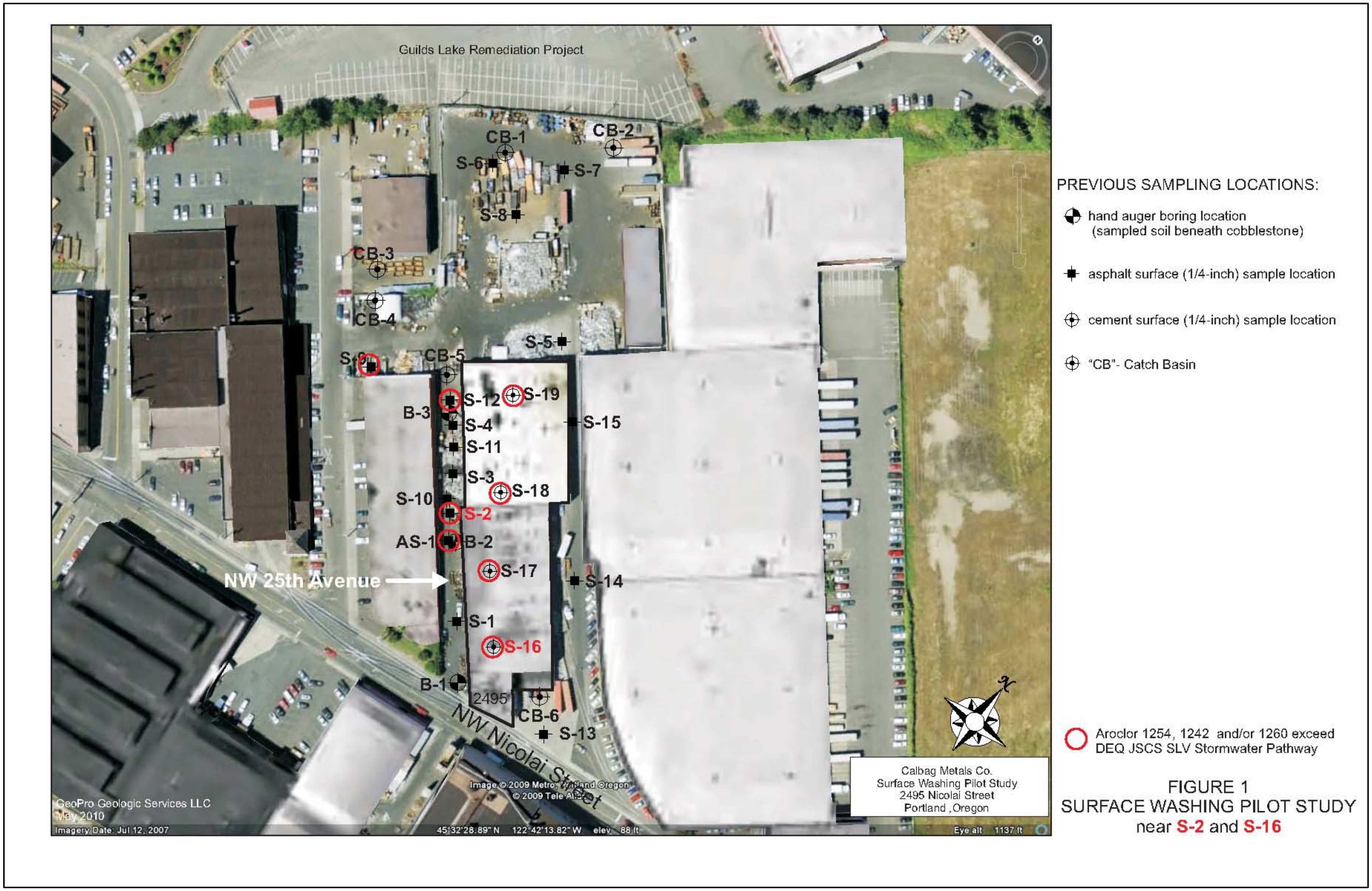

Figure 1 – Pilot Test Site Location Map

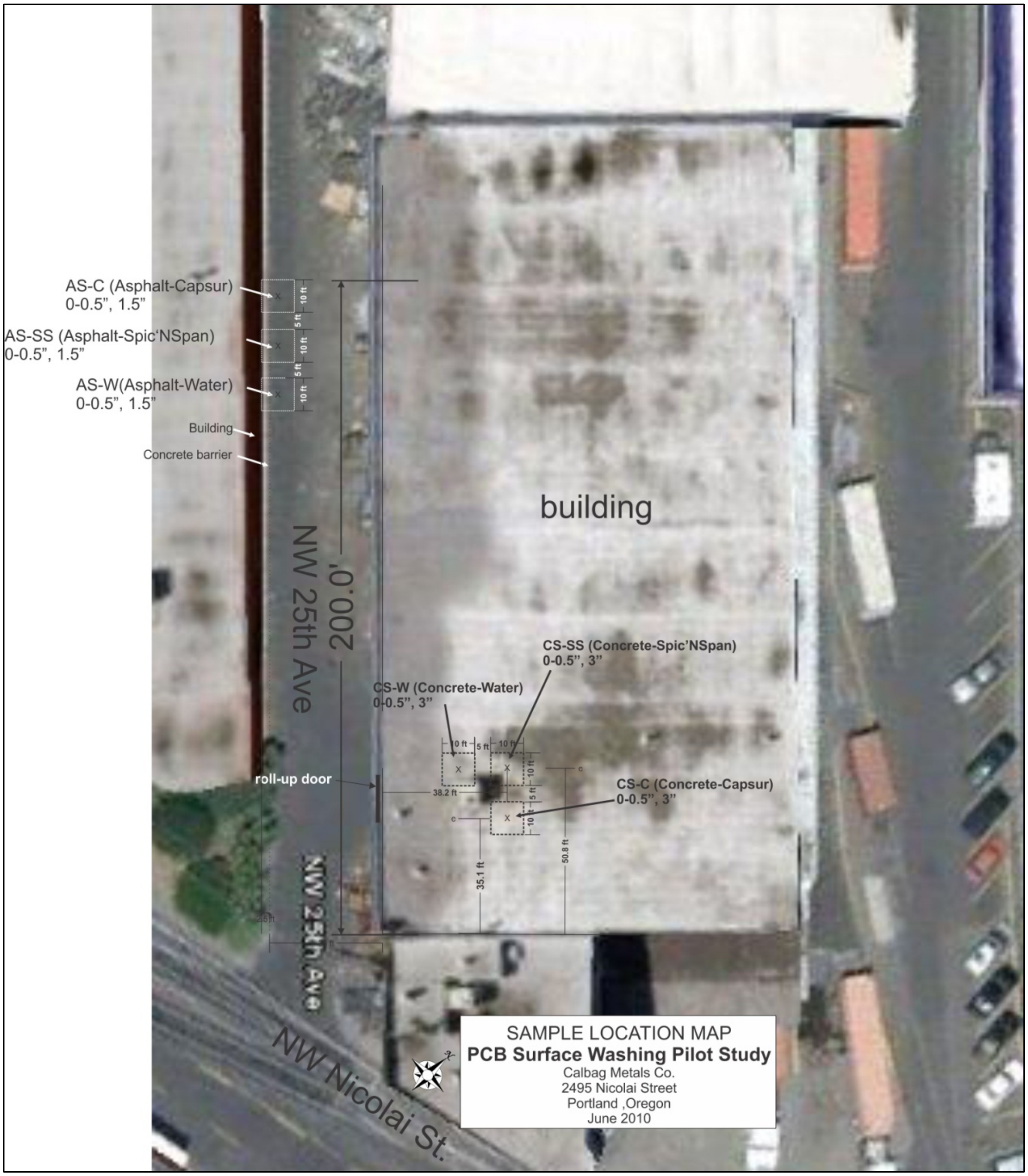

Figure 2 –Pilot Test Sample Location Map

Figure 3 – Analytical Results Graphs

APPENDIX A1
Laboratory Report (CDROM)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

DATA DELIVERABLES PACKAGE
*** Level III ***

GeoPro Geologic Services
Richard Kent
P.O. Box 26
Battle Ground, WA 98604

Client Project: Calbag PCB Surface Washing Pilot Study
Client Project Number: 100212
Laboratory Work Order #: PTF0829
Project Manager: Estella Rieben

The total number of pages contained in this data package is:

235

November 8, 2010

Prepared by: Doug McKenzie
TestAmerica, Inc.
9405 S. W. Nimbus Avenue
Beaverton, Oregon 97008
(503) 906-9200
(503) 906-9210

Table of Contents
PTF0829

9405 SW Nimbus Avenue Beaverton, OR 97008 **tel** 503.906.9200 **fax** 503.906.9210 **www.testamericainc.com**

THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

Client:	GeoPro Geologic Services	**Date Sampled:**	6/27/2010
Project:	Calbag PCB Surface Washing Pilot Study 100212	**Date Received:**	6/28/2010
Lab:	PTF0829		

SAMPLE RECEIPT: Samples were received intact, with chain of custody documentation. The sample temperature was measured at 10.9 and 11.4 °C upon receipt at the laboratory.

The sample coolers, as received, did not contain ice, and the measured temperature exceeded the 2.0 – 6.0 °C required range.

HOLDING TIMES: **SM 4500-H B**

The SM 4500-H B analysis for sample PTF0829-33 was performed past the method-specified holding time per the client's approval.

PROBLEMS ENCOUNTERED: **EPA 8082 PCB**

Several EPA 8082 samples consisted of a matrix that proved complicated for the preparation/analysis process.
The initial sample weight was reduced from 60 g to 30 g, and the final volume was doubled in an effort to lower the possibility that heavy residue within the sample extracts would cause the following problems:

1. Clogging of the mgSO4 packed funnels that the sample extract is filtered through. This could greatly reduce surrogate spike recoveries and extraction efficiency.
2. Clogging of the pre-GPC (Gel Permeation Cleanup) filters which protect the GPC from unwanted sediment/residue.
3. Clogging of the GPC lines or pumps which would prevent the sample from being properly drawn up and loaded.
4. Clogging or rendering the GPC column useless, thus preventing the samples from being properly cleaned.

Diminished GPC column performance can cause retention of increased matrix interference and/or decreased recovery of target analytes.

By reducing the amount of sample utilized in the extraction process, the GPC was able to function efficiently. As a result, the GPC provided a more precise cleanup in terms of surrogate spike and/or target analyte recoveries.

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Lab:	PTF0829		

The heavy residue that could not be removed during the GPC cleanup process was further reduced by additional dilution of the sample extracts prior to their being loaded on the analytical GC.

Although these preventative measures were utilized, excessive residue caused contamination of the instrument inlet and columns. This reduced the analyte recoveries for the associated continuing calibration verification standards (CCVs).

Additional dilution of the sample extracts was required to complete the analysis according to the method specified criteria, which elevated the EPA 8082 reporting limits to a level higher than the limits specified for Joint Source Control.

QA/QC CRITERIA: **EPA 8082**

Due to sample matrix effects, the surrogate (Decachlorobiphenyl) recovery for EPA 8082 samples PTF0829-04 PTF0829-08 was outside the acceptance limits.

EPA 8082 samples PTF0829-17, PTF0829-19, PTF0829-20, PTF0829-23, and PTF0829-30 required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate (Decachlorobiphenyl) spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

The surrogate (Decachlorobiphenyl) recovery for EPA 8082 sample PTF0829-33 was unable to be calculated due to matrix interference.

Due to sample matrix effects, the surrogate (Decachlorobiphenyl) recovery for EPA 8082 sample PTF0829-26 was outside the acceptance limits.

The surrogate (Decachlorobiphenyl) recoveries for EPA 8082 samples 10F0915-MS1 and 10F0915-MSD1 were reported from analysis where the associated CCV recovery for the specified analyte was below the acceptance limits, and should be considered estimated values.

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THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

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Project:	Calbag PCB Surface Washing Pilot Study 100212	**Date Received:**	6/28/2010
Lab:	PTF0829		

The Aroclor 1016 data for EPA 8082 samples 10F0915-MS1 and 10F0915-MSD1 was rejected. No reportable results are available.

The Aroclor 1260 recoveries for EPA 8082 samples 10F0915-MS1 and 10F0915-MSD1 were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
The Aroclor 1260 and surrogate (Decachlorobiphenyl) data for EPA 8082 samples 10F0915-MS2 and 10F0915-MSD2 was rejected. No reportable results are available.

The Aroclor 1016 and Aroclor 1260 recoveries for EPA 8082 sample 10F0915-MS2 and 10F0915-MSD2 were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

There were no results reported for the MS/MSD analyzed with EPA 8082 batch 10G0118. The sample used for the MS/MSD required a dilution due to sample matrix. Because of this, the spike compounds were diluted below the detection limit.

OBSERVATIONS: **EPA 8082**

The reporting limit was raised for EPA 8082 samples PTF0829-01, PTF0829-02, PTF0829-03, PTF0829-04, PTF0829-05, PTF0829-06, PTF0829-07, PTF0829-08, PTF0829-09, PTF0829-10, PTF0829-11, PTF0829-12, PTF0829-13, PTF0829-14, PTF0829-15, PTF0829-16, PTF0829-17, PTF0829-18, PTF0829-19, PTF0829-20, PTF0829-21, PTF0829-22, PTF0829-23, PTF0829-25, PTF0829-26, PTF0829-29, PTF0829-30, and PTF0829-33 due to high concentrations of non-target analytes.

1311/7470A

The Mercury reporting limit for 1311/7470A sample PTF0829-33 was raised due to sample matrix effects.

SUBCONTRACTED: No analyses were subcontracted.

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

Client:	GeoPro Geologic Services	**Date Sampled:**	6/27/2010
Project:	Calbag PCB Surface Washing Pilot Study 100212	**Date Received:**	6/28/2010
Lab:	PTF0829		

"I certify that this data package is in compliance with the contract both technically and for completeness, for all conditions other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Laboratory Director or her designee, as verified by the following signature."

TestAmerica Portland

Estella Rieben

Estella Rieben
Project Manager

9405 SW Nimbus Ave. Beaverton, OR 97008 (503) 906-9200 (503) 906-9210

Sample Receipt Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTF0829

CLIENT: GeoPro Geologic Services LLC

REPORT TO: GeoPro LLC

ADDRESS: PO Box 26, Battle Ground, WA 98604

PHONE: 360-666-1465 FAX:

INVOICE TO: Mr. Chuck Gleason, Calbag Metals Co, 2495 NW Nicolai St., Portland, OR 97296

P.O. NUMBER:

PROJECT NAME: Calbag PCB Surface Washing Pilot Study

PROJECT NUMBER: 100212

SAMPLED BY: GeoPro LLC

PRESERVATIVE: N/a

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ☒ 10 (STD.) ☐ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

Petroleum Hydrocarbon Analyses: ☐ 5 (STD.) ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	REQUESTED ANALYSES: EPA 8082 PCB	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	AS-1	0950 6/27/10	X	O	1	asphalt	
2	AS-2	1140 6/27/10					
3	AS-3	6/27/10 1240					
4	AS-4	6/27/10 1250					
5	AS-5	6/27/10 0951					
6	AS-6	6/27/10 1206					
7	AS-7	6/27/10 1303					
8	AS-8	6/27/10 1303					
9	AS-9	6/27/10 0953					
10	AS-10	6/27/10 0951					

RELEASED BY: PRINT NAME: Pat Kent FIRM: GeoPro LLC DATE: 6/28/10 TIME: 1156

RECEIVED BY: PRINT NAME: Megan Henning FIRM: TAP DATE: 06/28/10 TIME: 1156

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: Detect PCB at JSCS cleanup levels. Additional cleanup necessary to achieve 10 ppb.

TEMP: 10.9 11.4

PAGE 1 OF 4

TAL-1000(0408)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTF0829

CLIENT: GeoPro Geologic Services LLC

REPORT TO: GeoPro LLC
ADDRESS: PO Box 26
Battle Ground, WA 98604

PHONE: 360-666-1465 FAX:

INVOICE TO: Mr. Chuck Gleason
Calbag Metals Co.
2495 NW Nicolai St., PO Box 10067
Portland, OR 97296-0067

P.O. NUMBER:

PROJECT NAME: Calbag PCB Surface Washing Pilot Study
PROJECT NUMBER: 100212
SAMPLED BY: GeoPro LLC

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] 10 STD. 7 5 4 3 2 1 <1
Petroleum Hydrocarbon Analyses: 5 STD. 4 3 2 1 <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: NA

REQUESTED ANALYSES: EPA 8082 PCB

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME		EPA 8082 PCB	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	AS-11	6-27-10	11:41	X	O	1	asphalt	
2	AS-12	6-27-10	1137	↓	↓	↓	asphalt	
3	AS-13	6-27-10	1328	↓	↓	↓	asphalt	
4	AS-14	6-27-10	1325	↓	↓	↓	asphalt	
5	AS-15	6-27-10	1335	↓	↓	↓	asphalt	
6	AS-16	6-27-10	1339	↓	↓	↓	asphalt	
7	CS-1	6-27-10	0920	↓	↓	↓	concrete	
8	CS-2	6-27-10	1000	↓	↓	↓	concrete	
9	CS-3	6-27-10	1025	↓	↓	↓	concrete	
10	CS-4	6-27-10	11 05	↓	↓	↓	concrete	

RELEASED BY: [signature] PRINT NAME: Pat Kent FIRM: GeoPro LLC DATE: 6/28/10 TIME: 1156
RECEIVED BY: [signature] PRINT NAME: Megan Henning FIRM: TAP DATE: 06/28/10 TIME: 1156
RELEASED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: Detect PCB at JSCS cleanup levels. Additional cleanup necessary to achieve 10 ppb

TEMP: 10.9 11.4 PAGE 2 OF 4

TAL-1000(0408)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTF0829

CLIENT:
REPORT TO: Geo Pro LLC
ADDRESS: P.O. Box 26
Battle Ground, WA 98604
PHONE: 360-666-1465 FAX:
PROJECT NAME: Calbag PCB Surface washing Pilot Study
PROJECT NUMBER: 100212
SAMPLED BY: Geo Pro LLC

INVOICE TO: Mr. Chuck Gleason
Calbag Metal Co.
2495 NW Nicoli St., P.O. Box 10067
Portland, OR 97296-0067
P.O. NUMBER:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: ☒ 10 STD. ☐ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1
Petroleum Hydrocarbon Analyses: ☐ 5 STD. ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: NA

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	EPA 8082 PCB	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	CS-5	6-27-10 0924	X	O	1	Concrete	
2	CS-6	6-27-10 1004					
3	CS-7	6-27-10 1048					
4	CS-8	6-27-10 1157					
5	CS-9	6-27-10 0930					
6	CS-10	6-27-10 0935					
7	CS-11	6-27-10 1052					
8	CS-12	6-27-10 1048					
9	CS-13	6-27-10 1211					
10	CS-14	6-27-10 1214					

RELEASED BY: [signature] DATE: 6/28/10
PRINT NAME: Pat Kent FIRM: Geo Pro LLC TIME: 1150
RECEIVED BY: [signature] DATE: 06/28/10
PRINT NAME: Megan Henning FIRM: TAP TIME: 1150

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: Detect PCB at JSCS cleanup levels. Additional cleanup necessary to achieve 10 ppb

TEMP: 10.9 PAGE 3 OF 4

N-4

TAL-1000(0408)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 — 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 — 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 — 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 — 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTF0829

CLIENT: GeoPro Geologic Services LLC

REPORT TO: GeoPro LLC
ADDRESS: P.O. Box 26
Battle Ground. WA 98604
PHONE: (360) 666-1465 FAX:

INVOICE TO: Mr. Chuck Gleason
Calbag Metals Co.
2495 NW Nicolai St, P.O. Box 10067
Portland. OR 97296-0067

P.O. NUMBER:

PROJECT NAME: Calbag PCB Surface Washing Pilot Study
PROJECT NUMBER: 100212
SAMPLED BY: GeoPro LLC

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] 10 (STD.) 7 5 4 3 2 1 <1
Petroleum Hydrocarbon Analyses: 5 (STD.) 4 3 2 1 <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: NA

REQUESTED ANALYSES: EPA 8082 PCB

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	EPA 8082 PCB	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	CS-15	6/27/10 1230	X	O	1	Concrete	
2	CS-16	6/27/10 1233	X	O	1	concrete	
3	W-1	6/27/10 1347	HOLD for clarification City PDX Discharge Wastewater	W	2	water	
4							
5							
6							
7							
8							
9							
10							

RELEASED BY: [signature] PRINT NAME: Pat Kent FIRM: GeoPro LLC DATE: 6/28/10 TIME: 1156
RECEIVED BY: [signature] PRINT NAME: Megan Henning FIRM: TAP DATE: 06/28/10 TIME: 1156
RELEASED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: Detect PCB at JSCS cleanup levels. Additional cleanup necessary to achieve 10 ppb.

TEMP: 10.9 11.4

PAGE 4 OF 4

TAL-1000(0408)

WORK ORDER

PTF0829

TestAmerica Portland **Printed: 7/12/2010 5:14:47PM**

GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Project Manager: Estella Rieben

Project Number: 100212

Report To:

GeoPro Geologic Services
Richard Kent
P.O. Box 26
Battle Ground, WA 98604
Phone: 360-666-1465
Fax: 360-666-8915

Invoice To:

Calbag Metals Company-Portland
Chuck Gleason
P.O. Box 10067
Portland, OR 97296
Phone: (503) 226-3441
Fax: (503) 228-0184

Sample Receipt

Work Order Due Date: **07/15/10 18:00 (12 day TAT)**

Samples Received:	By:	Samples Logged In:	By:
06/28/10 11:56	Megan L. Henning	06/28/10 12:15	Jessica Morgan

Number of Coolers: **2**
Receipt Temp: **10.9°C**
ımples received on ice?: **No**
ustody Seals Present?: **No**
All Containers Intact?: **Yes**
ıple labels/COC agree?: **Yes**
Samples Preserved Properl?: **Yes**

Submitted by: **N/A**
Shipped Via: **Client**
SDG: **PTF0829**

COMMENTS: project made 4/09 by Estella
New Client, need JDE code and pricing

Analysis	Due	TAT	Expires	Comments
PTF0829-01 Other dry AS-1 (Sampled: 06/27/10 09:50)				
Data Package - Level III	07/15/10 08:00	12	07/27/10 09:50	
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:50	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:50	Level III DDP, Need reporting limit of 10ppb
PTF0829-02 Other dry AS-2 (Sampled: 06/27/10 11:40)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 11:40	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 11:40	Level III DDP, Need reporting limit of 10ppb
PTF0829-03 Other dry AS-3 (Sampled: 06/27/10 12:40)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:40	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:40	Level III DDP, Need reporting limit of 10ppb
PTF0829-04 Other dry AS-4 (Sampled: 06/27/10 12:50)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:50	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:50	Level III DDP, Need reporting limit of 10ppb
PTF0829-05 Other dry AS-5 (Sampled: 06/27/10 09:51)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:51	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:51	Level III DDP, Need reporting limit of 10ppb
PTF0829-06 Other dry AS-6 (Sampled: 06/27/10 12:06)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:06	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:06	Level III DDP, Need reporting limit of 10ppb
PTF0829-07 Other dry AS-7 (Sampled: 06/27/10 13:03)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 13:03	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 13:03	Level III DDP, Need reporting limit of 10ppb

GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Project Manager: Estella Rieben

Project Number: 100212

Analysis	Due	TAT	Expires	Comments
PTF0829-08 Other dry AS-8 (Sampled: 06/27/10 13:03)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 13:03	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 13:03	Level III DDP, Need reporting limit of 10ppb
PTF0829-09 Other dry AS-9 (Sampled: 06/27/10 09:53)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:53	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:53	Level III DDP, Need reporting limit of 10ppb
PTF0829-10 Other dry AS-10 (Sampled: 06/27/10 09:51)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:51	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:51	Level III DDP, Need reporting limit of 10ppb
PTF0829-11 Other dry AS-11 (Sampled: 06/27/10 11:41)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 11:41	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 11:41	Level III DDP, Need reporting limit of 10ppb
PTF0829-12 Other dry AS-12 (Sampled: 06/27/10 11:37)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 11:37	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 11:37	Level III DDP, Need reporting limit of 10ppb
PTF0829-13 Other dry AS-13 (Sampled: 06/27/10 13:28)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 13:28	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 13:28	Level III DDP, Need reporting limit of 10ppb
PTF0829-14 Other dry AS-14 (Sampled: 06/27/10 13:25)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 13:25	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 13:25	Level III DDP, Need reporting limit of 10ppb
PTF0829-15 Other dry AS-15 (Sampled: 06/27/10 13:35)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 13:35	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 13:35	Level III DDP, Need reporting limit of 10ppb
PTF0829-16 Other dry AS-16 (Sampled: 06/27/10 13:39)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 13:39	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 13:39	Level III DDP, Need reporting limit of 10ppb
PTF0829-17 Other dry CS-1 (Sampled: 06/27/10 09:20)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:20	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:20	Level III DDP, Need reporting limit of 10ppb
PTF0829-18 Other dry CS-2 (Sampled: 06/27/10 10:00)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 10:00	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 10:00	Level III DDP, Need reporting limit of 10ppb
PTF0829-19 Other dry CS-3 (Sampled: 06/27/10 10:25)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 10:25	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 10:25	Level III DDP, Need reporting limit of 10ppb

WORK ORDER

PTF0829

TestAmerica Portland **Printed: 7/12/2010 5:14:47PM**

GeoPro Geologic Services

Project: **Calbag PCB Surface Washing Pilot Study**

Project Manager: **Estella Rieben**

Project Number: **100212**

Analysis	Due	TAT	Expires	Comments
PTF0829-20 Other dry CS-4 (Sampled: 06/27/10 11:05)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 11:05	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 11:05	Level III DDP, Need reporting limit of 10ppb
PTF0829-21 Other dry CS-5 (Sampled: 06/27/10 09:24)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:24	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:24	Level III DDP, Need reporting limit of 10ppb
PTF0829-22 Other dry CS-6 (Sampled: 06/27/10 10:04)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 10:04	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 10:04	Level III DDP, Need reporting limit of 10ppb
PTF0829-23 Other dry CS-7 (Sampled: 06/27/10 10:48)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 10:48	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 10:48	Level III DDP, Need reporting limit of 10ppb
PTF0829-24 Other dry CS-8 (Sampled: 06/27/10 11:57)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 11:57	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 11:57	Level III DDP, Need reporting limit of 10ppb
PTF0829-25 Other dry CS-9 (Sampled: 06/27/10 09:30)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:30	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:30	Level III DDP, Need reporting limit of 10ppb
PTF0829-26 Other dry CS-10 (Sampled: 06/27/10 09:35)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 09:35	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 09:35	Level III DDP, Need reporting limit of 10ppb
PTF0829-27 Other dry CS-11 (Sampled: 06/27/10 10:52)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 10:52	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 10:52	Level III DDP, Need reporting limit of 10ppb
PTF0829-28 Other dry CS-12 (Sampled: 06/27/10 10:48)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 10:48	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 10:48	Level III DDP, Need reporting limit of 10ppb
PTF0829-29 Other dry CS-13 (Sampled: 06/27/10 12:11)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:11	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:11	Level III DDP, Need reporting limit of 10ppb
PTF0829-30 Other dry CS-14 (Sampled: 06/27/10 12:14)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:14	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:14	Level III DDP, Need reporting limit of 10ppb
PTF0829-31 Other dry CS-15 (Sampled: 06/27/10 12:30)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:30	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:30	Level III DDP, Need reporting limit of 10ppb

GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Project Manager: Estella Rieben

Project Number: 100212

Analysis	Due	TAT	Expires	Comments
PTF0829-32 Other dry CS-16 (Sampled: 06/27/10 12:33)				
Solids, Dry Weight	07/06/10 16:00	5	07/25/10 12:33	
JSC 8082 PCB	07/15/10 08:00	12	07/11/10 12:33	Level III DDP, Need reporting limit of 10ppb
PTF0829-33 Water W-1 (Sampled: 06/27/10 13:47)				**HOLD**
TCLP Extraction - Metals	07/13/10 08:00	10	07/25/10 13:47	Level III DDP, added per client 6/29 ER, use from 1L amber
TCLP Metals 8 (ICP/MS)	07/13/10 08:00	10	12/24/10 13:47	Level III DDP, added per client 6/29 ER
8082 PCB	07/13/10 08:00	10	07/04/10 13:47	Level III DDP, added per client 6/29 ER, this one is not JSC per client.
pH- SM 4500-H B	07/13/10 08:00	10	06/28/10 13:47	Level III DDP, added per client 6/29 ER, okay to do out of hold, use out of 1L amber

Analysis groups included in this work order

Data Package - Level III

Data Package - Semivols	Data Package

TCLP Metals 8 (ICP/MS)

Se TCLP ICPMS 6020	Pb TCLP ICPMS 6020	Hg TCLP CVAA 7470A	Cr TCLP ICPMS 6020
Cd TCLP ICPMS 6020	Ba TCLP ICPMS 6020	As TCLP ICPMS 6020	Ag TCLP ICPMS 6020

Reviewed By

Date

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTF0829 Date/Time Received: 6/28/10 1156
Client Name and Project: Geo Pro

Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☑PDT/PST ☐AK ☐OTHER

Unpacking Checks:
Cooler #(s): 1 1
Temperatures: 10.9 11.4
Digi #1 ☐ Digi #2 ☐ IR Gun ☑ (☐Plastic ☑Glass)

Temperature out of Range:
✓ Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other: ______

Initials: JM

N/A	Yes	No	
☑	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☑	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☑	☐	3. Chain of Custody present? If no, document on NOD.
	☑	☐	4. Bottles received intact? If no, document on NOD.
	☑	☐	5. Sample is not multiphasic? If no, document on NOD.
	☑	☐	6. Proper Container and preservatives used? If no, document on NOD.
☑	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☑	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☑	☐	☐	9. HF Dilution required?
	☑	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☑	☐	11. Did chain of custody agree with samples received? If no, document on NOD.
	☑	☐	12. Is the "Sampled by" section of the COC completed?
☑	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☑	☐	☐	14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
	☐	☑	15. Did samples require preservation with sodium thiosulfate?
☑	☐	☐	16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
☑	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☑	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☑	☐	☐	19. Are analyses with short holding times received in hold?
	☑	☐	20. Was Standard Turn Around (TAT) requested?
	☑	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

F:\Sample_Receiving\Receiving_Documents\Forms (effective 3/16/09)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTF0829

Login Checks:

Initials: JM

N/A	Yes	No	
	☑	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☑	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☑	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☐	☑	☐	25. Were special log in instructions read and followed?
	☑	☐	26. Were tests logged checked against the COC?
☑	☐	☐	27. Were rush notices printed and delivered?
☑	☐	☐	28. Were short hold notices printed and delivered?
☑	☐	☐	29. Were subcontract COCs printed?
☑	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: JM

N/A	Yes	No	
☑	☐	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☑	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☑	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☑	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☑	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☑	☐	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Analytical Report

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

November 03, 2010

Richard Kent
GeoPro Geologic Services
P.O. Box 26
Battle Ground, WA 98604

RE: Calbag PCB Surface Washing Pilot Study

Enclosed are the results of analyses for samples received by the laboratory on 06/28/10 11:56.
The following list is a summary of the Work Orders contained in this report, generated on 11/03/10 15:03.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PTF0829	Calbag PCB Surface Washing	100212

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AS-1	PTF0829-01	Other dry	06/27/10 09:50	06/28/10 11:56
AS-2	PTF0829-02	Other dry	06/27/10 11:40	06/28/10 11:56
AS-3	PTF0829-03	Other dry	06/27/10 12:40	06/28/10 11:56
AS-4	PTF0829-04	Other dry	06/27/10 12:50	06/28/10 11:56
AS-5	PTF0829-05	Other dry	06/27/10 09:51	06/28/10 11:56
AS-6	PTF0829-06	Other dry	06/27/10 12:06	06/28/10 11:56
AS-7	PTF0829-07	Other dry	06/27/10 13:03	06/28/10 11:56
AS-8	PTF0829-08	Other dry	06/27/10 13:03	06/28/10 11:56
AS-9	PTF0829-09	Other dry	06/27/10 09:53	06/28/10 11:56
AS-10	PTF0829-10	Other dry	06/27/10 09:51	06/28/10 11:56
AS-11	PTF0829-11	Other dry	06/27/10 11:41	06/28/10 11:56
AS-12	PTF0829-12	Other dry	06/27/10 11:37	06/28/10 11:56
AS-13	PTF0829-13	Other dry	06/27/10 13:28	06/28/10 11:56
AS-14	PTF0829-14	Other dry	06/27/10 13:25	06/28/10 11:56
AS-15	PTF0829-15	Other dry	06/27/10 13:35	06/28/10 11:56
AS-16	PTF0829-16	Other dry	06/27/10 13:39	06/28/10 11:56
CS-1	PTF0829-17	Other dry	06/27/10 09:20	06/28/10 11:56
CS-2	PTF0829-18	Other dry	06/27/10 10:00	06/28/10 11:56
CS-3	PTF0829-19	Other dry	06/27/10 10:25	06/28/10 11:56
CS-4	PTF0829-20	Other dry	06/27/10 11:05	06/28/10 11:56
CS-5	PTF0829-21	Other dry	06/27/10 09:24	06/28/10 11:56
CS-6	PTF0829-22	Other dry	06/27/10 10:04	06/28/10 11:56
CS-7	PTF0829-23	Other dry	06/27/10 10:48	06/28/10 11:56
CS-8	PTF0829-24	Other dry	06/27/10 11:57	06/28/10 11:56
CS-9	PTF0829-25	Other dry	06/27/10 09:30	06/28/10 11:56
CS-10	PTF0829-26	Other dry	06/27/10 09:35	06/28/10 11:56
CS-11	PTF0829-27	Other dry	06/27/10 10:52	06/28/10 11:56
CS-12	PTF0829-28	Other dry	06/27/10 10:48	06/28/10 11:56
CS-13	PTF0829-29	Other dry	06/27/10 12:11	06/28/10 11:56
CS-14	PTF0829-30	Other dry	06/27/10 12:14	06/28/10 11:56
CS-15	PTF0829-31	Other dry	06/27/10 12:30	06/28/10 11:56
CS-16	PTF0829-32	Other dry	06/27/10 12:33	06/28/10 11:56
W-1	PTF0829-33	Water	06/27/10 13:47	06/28/10 11:56

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Estella K Rieben

Estella Rieben, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Analytical Case Narrative
TestAmerica - Portland, OR

PTF0829

Portland Harbor Joint Source Control method for PCB analysis was requested for this sample set. This request was made by GeoPro Geologic Services due to the requirements requested by DEQ.

The sample matrix is asphalt. This proved to be a very difficult matrix for extraction and analysis. The asphalt, when mixed with solvent, became a very thick, dark substance that clung to glassware, clogged filters, locked up drying agents, and damaged some equipment used for extraction.

In order to reduce equipment damage and malfunction, dilutions were made of the samples at several points in the extraction and analysis process. The reporting limits were raised due to these dilutions. This resulted in reporting limits above that of the Joint Source Control limits.

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

TCLP Metals per EPA 1311/6000/7000 Series Methods

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-33 (W-1)			**Water**			**Sampled: 06/27/10 13:47**				
Arsenic	1311/6020	ND	-----	0.100	mg/l	1x	10G0147	07/06/10 22:55	07/07/10 18:36	
Barium	"	**0.393**	-----	0.100	"	"	"	"	"	
Cadmium	"	ND	-----	0.100	"	"	"	"	"	
Chromium	"	ND	-----	0.200	"	"	"	"	"	
Lead	"	**1.58**	-----	0.100	"	"	"	"	"	
Selenium	"	**0.130**	-----	0.100	"	"	"	"	"	
Silver	"	ND	-----	0.100	"	"	"	"	"	

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Estella K Rieben

Estella Rieben, Project Manager

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

TCLP Mercury per EPA Methods 1311/7470A

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-33 (W-1)			**Water**			**Sampled: 06/27/10 13:47**				
Mercury	1311/7470A	ND	-----	0.0800	mg/l	1x	10G0180	07/07/10 15:44	07/07/10 17:34	**RL1**

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-01 (AS-1)			**Other dry**			**Sampled: 06/27/10 09:50**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	26.5	ug/kg wet	2x	10F0915	06/29/10 12:00	07/08/10 15:37	
Aroclor 1221	"	ND	-----	53.3	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1242	"	**164**	-----	26.5	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1254	"	**81.8**	-----	26.5	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.5	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*68.3%*		*16 - 149 %*	*"*			*"*
PTF0829-02 (AS-2)			**Other dry**			**Sampled: 06/27/10 11:40**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	26.5	ug/kg wet	2x	10F0915	06/29/10 12:00	07/08/10 15:37	
Aroclor 1221	"	ND	-----	53.2	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1242	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1254	"	**42.2**	-----	26.5	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.5	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.5	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*96.8%*		*16 - 149 %*	*"*			*"*
PTF0829-03 (AS-3)			**Other dry**			**Sampled: 06/27/10 12:40**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	52.3	ug/kg wet	4x	10F0915	06/29/10 12:00	07/08/10 16:00	
Aroclor 1221	"	ND	-----	105	"	"	"	"	"	
Aroclor 1232	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1242	"	**246**	-----	52.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1254	"	**165**	-----	52.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	52.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*70.7%*		*16 - 149 %*	*"*			*"*

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Estella K Rieben

Estella Rieben, Project Manager

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-04 (AS-4)			**Other dry**			**Sampled: 06/27/10 12:50**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	26.6	ug/kg wet	2x	10F0915	06/29/10 12:00	07/08/10 16:00	
Aroclor 1221	"	ND	-----	53.5	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1242	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1254	"	**35.4**	-----	26.6	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*150%*		*16 - 149 %*	*"*		*"*	***ZX***
PTF0829-05 (AS-5)			**Other dry**			**Sampled: 06/27/10 09:51**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	52.3	ug/kg wet	4x	10F0915	06/29/10 12:00	07/08/10 16:23	
Aroclor 1221	"	ND	-----	105	"	"	"	"	"	
Aroclor 1232	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1242	"	**214**	-----	52.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1254	"	**132**	-----	52.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	52.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*79.0%*		*16 - 149 %*	*"*		*"*	
PTF0829-06 (AS-6)			**Other dry**			**Sampled: 06/27/10 12:06**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	26.6	ug/kg wet	2x	10F0915	06/29/10 12:00	07/08/10 16:23	
Aroclor 1221	"	ND	-----	53.5	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1242	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1254	"	**104**	-----	26.6	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*102%*		*16 - 149 %*	*"*		*"*	

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Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-07 (AS-7)				**Other dry**		**Sampled: 06/27/10 13:03**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	66.6	ug/kg wet	5x	10F0915	06/29/10 12:00	07/07/10 12:52	
Aroclor 1221	"	ND	-----	134	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1242	"	**331**	-----	66.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1254	"	**226**	-----	66.6	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*95.3%*		*16 - 149 %*	*"*		*"*	
PTF0829-08 (AS-8)				**Other dry**		**Sampled: 06/27/10 13:03**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	26.0	ug/kg wet	2x	10F0915	06/29/10 12:00	07/08/10 16:46	
Aroclor 1221	"	ND	-----	52.3	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.0	"	"	"	"	"	
Aroclor 1242	"	ND	-----	26.0	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.0	"	"	"	"	"	
Aroclor 1254	"	**91.8**	-----	26.0	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.0	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.0	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.0	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*153%*		*16 - 149 %*	*"*		*"*	***ZX***
PTF0829-09 (AS-9)				**Other dry**		**Sampled: 06/27/10 09:53**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	65.9	ug/kg wet	5x	10F0915	06/29/10 12:00	07/07/10 13:15	
Aroclor 1221	"	ND	-----	133	"	"	"	"	"	
Aroclor 1232	"	ND	-----	65.9	"	"	"	"	"	
Aroclor 1242	"	**338**	-----	65.9	"	"	"	"	"	
Aroclor 1248	"	ND	-----	65.9	"	"	"	"	"	
Aroclor 1254	"	**249**	-----	65.9	"	"	"	"	"	
Aroclor 1260	"	ND	-----	65.9	"	"	"	"	"	
Aroclor 1262	"	ND	-----	65.9	"	"	"	"	"	
Aroclor 1268	"	ND	-----	65.9	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*86.3%*		*16 - 149 %*	*"*		*"*	

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-10 (AS-10)			**Other dry**			**Sampled: 06/27/10 09:51**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	66.3	ug/kg wet	5x	10F0915	06/29/10 12:00	07/07/10 13:41	
Aroclor 1221	"	ND	-----	133	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1242	"	**331**	-----	66.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1254	"	**222**	-----	66.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*74.3%*		*16 - 149 %*	*"*			*"*
PTF0829-11 (AS-11)			**Other dry**			**Sampled: 06/27/10 11:41**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	53.1	ug/kg wet	4x	10F0915	06/29/10 12:00	07/09/10 16:54	
Aroclor 1221	"	ND	-----	107	"	"	"	"	"	
Aroclor 1232	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1242	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1248	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1254	"	**69.5**	-----	53.1	"	"	"	"	"	
Aroclor 1260	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1262	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1268	"	ND	-----	53.1	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*71.2%*		*16 - 149 %*	*"*			*"*
PTF0829-12 (AS-12)			**Other dry**			**Sampled: 06/27/10 11:37**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	53.1	ug/kg wet	4x	10F0915	06/29/10 12:00	07/09/10 17:17	
Aroclor 1221	"	ND	-----	107	"	"	"	"	"	
Aroclor 1232	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1242	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1248	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1254	"	**62.2**	-----	53.1	"	"	"	"	"	
Aroclor 1260	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1262	"	ND	-----	53.1	"	"	"	"	"	
Aroclor 1268	"	ND	-----	53.1	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*69.0%*		*16 - 149 %*	*"*			*"*

TestAmerica Portland

Estella K Rieben

Estella Rieben, Project Manager

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-13 (AS-13)				**Other dry**		**Sampled: 06/27/10 13:28**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	65.4	ug/kg wet	5x	10F0915	06/29/10 12:00	07/07/10 14:08	
Aroclor 1221	"	ND	-----	132	"	"	"	"	"	
Aroclor 1232	"	ND	-----	65.4	"	"	"	"	"	
Aroclor 1242	"	**332**	-----	65.4	"	"	"	"	"	
Aroclor 1248	"	ND	-----	65.4	"	"	"	"	"	
Aroclor 1254	"	**245**	-----	65.4	"	"	"	"	"	
Aroclor 1260	"	ND	-----	65.4	"	"	"	"	"	
Aroclor 1262	"	ND	-----	65.4	"	"	"	"	"	
Aroclor 1268	"	ND	-----	65.4	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*79.6%*		*16 - 149 %*	"		"	
PTF0829-14 (AS-14)				**Other dry**		**Sampled: 06/27/10 13:25**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	65.0	ug/kg wet	5x	10F0915	06/29/10 12:00	07/07/10 14:34	
Aroclor 1221	"	ND	-----	131	"	"	"	"	"	
Aroclor 1232	"	ND	-----	65.0	"	"	"	"	"	
Aroclor 1242	"	**279**	-----	65.0	"	"	"	"	"	
Aroclor 1248	"	ND	-----	65.0	"	"	"	"	"	
Aroclor 1254	"	**196**	-----	65.0	"	"	"	"	"	
Aroclor 1260	"	ND	-----	65.0	"	"	"	"	"	
Aroclor 1262	"	ND	-----	65.0	"	"	"	"	"	
Aroclor 1268	"	ND	-----	65.0	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*80.0%*		*16 - 149 %*	"		"	
PTF0829-15 (AS-15)				**Other dry**		**Sampled: 06/27/10 13:35**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	26.6	ug/kg wet	2x	10F0915	06/29/10 12:00	07/13/10 14:01	
Aroclor 1221	"	ND	-----	53.5	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1242	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1254	"	**32.1**	-----	26.6	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*79.0%*		*16 - 149 %*	"		"	

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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PTF0829-16 (AS-16) — **Other dry** — **Sampled: 06/27/10 13:39** — **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	26.3	ug/kg wet	2x	10F0915	06/29/10 12:00	07/13/10 14:24	
Aroclor 1221	"	ND	-----	52.9	"	"	"	"	"	
Aroclor 1232	"	ND	-----	26.3	"	"	"	"	"	
Aroclor 1242	"	ND	-----	26.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	26.3	"	"	"	"	"	
Aroclor 1254	"	**32.7**	-----	26.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	26.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	26.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	26.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*65.2%*		*16 - 149 %*	*"*		*"*	

PTF0829-17 (CS-1) — **Other dry** — **Sampled: 06/27/10 09:20** — **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	66.4	ug/kg wet	20x	10F0915	06/29/10 12:00	07/07/10 15:00	
Aroclor 1221	"	ND	-----	134	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.4	"	"	"	"	"	
Aroclor 1242	"	**227**	-----	66.4	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.4	"	"	"	"	"	
Aroclor 1254	"	**200**	-----	66.4	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.4	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.4	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.4	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*40.2%*		*16 - 149 %*	*"*		*"*	***Z3***

PTF0829-18 (CS-2) — **Other dry** — **Sampled: 06/27/10 10:00** — **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	33.1	ug/kg wet	10x	10F0915	06/29/10 12:00	07/08/10 16:46	
Aroclor 1221	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1232	"	ND	-----	33.1	"	"	"	"	"	
Aroclor 1242	"	**50.6**	-----	33.1	"	"	"	"	"	
Aroclor 1248	"	ND	-----	33.1	"	"	"	"	"	
Aroclor 1254	"	**91.1**	-----	33.1	"	"	"	"	"	
Aroclor 1260	"	ND	-----	33.1	"	"	"	"	"	
Aroclor 1262	"	ND	-----	33.1	"	"	"	"	"	
Aroclor 1268	"	ND	-----	33.1	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*60.3%*		*16 - 149 %*	*"*		*"*	

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-19 (CS-3)				**Other dry**		**Sampled: 06/27/10 10:25**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	66.3	ug/kg wet	20x	10F0915	06/29/10 12:00	07/07/10 15:27	
Aroclor 1221	"	ND	-----	133	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1242	"	**358**	-----	66.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1254	"	**400**	-----	66.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*71.1%*		*16 - 149 %*	*"*		*"*	***Z3***
PTF0829-20 (CS-4)				**Other dry**		**Sampled: 06/27/10 11:05**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	66.6	ug/kg wet	20x	10F0915	06/29/10 12:00	07/07/10 15:54	
Aroclor 1221	"	ND	-----	134	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1242	"	**189**	-----	66.6	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1254	"	**294**	-----	66.6	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.6	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.6	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*59.9%*		*16 - 149 %*	*"*		*"*	***Z3***
PTF0829-21 (CS-5)				**Other dry**		**Sampled: 06/27/10 09:24**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	66.2	ug/kg wet	20x	10G0118	07/06/10 11:30	07/06/10 22:11	
Aroclor 1221	"	ND	-----	133	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1242	"	**108**	-----	66.2	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1254	"	**628**	-----	66.2	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.2	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*107%*		*16 - 149 %*	*"*		*"*	

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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PTF0829-22 (CS-6) — **Other dry** — **Sampled: 06/27/10 10:04** — **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	6.64	ug/kg wet	2x	10G0118	07/06/10 11:30	07/07/10 10:37	
Aroclor 1221	"	ND	-----	13.4	"	"	"	"	"	
Aroclor 1232	"	ND	-----	6.64	"	"	"	"	"	
Aroclor 1242	"	ND	-----	6.64	"	"	"	"	"	
Aroclor 1248	"	ND	-----	6.64	"	"	"	"	"	
Aroclor 1254	"	**43.7**	-----	6.64	"	"	"	"	"	
Aroclor 1260	"	ND	-----	6.64	"	"	"	"	"	
Aroclor 1262	"	ND	-----	6.64	"	"	"	"	"	
Aroclor 1268	"	ND	-----	6.64	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*62.7%*		*16 - 149 %*	*"*		*"*	

PTF0829-23 (CS-7) — **Other dry** — **Sampled: 06/27/10 10:48** — **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	66.3	ug/kg wet	20x	10G0118	07/06/10 11:30	07/06/10 22:56	
Aroclor 1221	"	ND	-----	133	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1242	"	**98.4**	-----	66.3	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1254	"	**353**	-----	66.3	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.3	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.3	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*84.4%*		*16 - 149 %*	*"*		*"*	***Z3***

PTF0829-24 (CS-8) — **Other dry** — **Sampled: 06/27/10 11:57**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	3.33	ug/kg wet	1x	10G0118	07/06/10 11:30	07/06/10 23:18	
Aroclor 1221	"	ND	-----	6.69	"	"	"	"	"	
Aroclor 1232	"	ND	-----	3.33	"	"	"	"	"	
Aroclor 1242	"	ND	-----	3.33	"	"	"	"	"	
Aroclor 1248	"	ND	-----	3.33	"	"	"	"	"	
Aroclor 1254	"	ND	-----	3.33	"	"	"	"	"	
Aroclor 1260	"	ND	-----	3.33	"	"	"	"	"	
Aroclor 1262	"	ND	-----	3.33	"	"	"	"	"	
Aroclor 1268	"	ND	-----	3.33	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*78.0%*		*16 - 149 %*	*"*		*"*	

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-25 (CS-9)			**Other dry**			**Sampled: 06/27/10 09:30**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	65.8	ug/kg wet	20x	10G0118	07/06/10 11:30	07/06/10 23:40	
Aroclor 1221	"	ND	-----	132	"	"	"	"	"	
Aroclor 1232	"	ND	-----	65.8	"	"	"	"	"	
Aroclor 1242	"	**224**	-----	65.8	"	"	"	"	"	
Aroclor 1248	"	ND	-----	65.8	"	"	"	"	"	
Aroclor 1254	"	**355**	-----	65.8	"	"	"	"	"	
Aroclor 1260	"	ND	-----	65.8	"	"	"	"	"	
Aroclor 1262	"	ND	-----	65.8	"	"	"	"	"	
Aroclor 1268	"	ND	-----	65.8	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*135%*		*16 - 149 %*	"		"	
PTF0829-26 (CS-10)			**Other dry**			**Sampled: 06/27/10 09:35**				**RL3**
Aroclor 1016	EPA 8082	ND	-----	65.5	ug/kg wet	20x	10G0118	07/06/10 11:30	07/07/10 00:02	
Aroclor 1221	"	ND	-----	132	"	"	"	"	"	
Aroclor 1232	"	ND	-----	65.5	"	"	"	"	"	
Aroclor 1242	"	**264**	-----	65.5	"	"	"	"	"	
Aroclor 1248	"	ND	-----	65.5	"	"	"	"	"	
Aroclor 1254	"	**333**	-----	65.5	"	"	"	"	"	
Aroclor 1260	"	ND	-----	65.5	"	"	"	"	"	
Aroclor 1262	"	ND	-----	65.5	"	"	"	"	"	
Aroclor 1268	"	ND	-----	65.5	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*160%*		*16 - 149 %*	"		"	***ZX***
PTF0829-27 (CS-11)			**Other dry**			**Sampled: 06/27/10 10:52**				
Aroclor 1016	EPA 8082	ND	-----	3.31	ug/kg wet	1x	10G0118	07/06/10 11:30	07/07/10 00:24	
Aroclor 1221	"	ND	-----	6.67	"	"	"	"	"	
Aroclor 1232	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1242	"	**5.18**	-----	3.31	"	"	"	"	"	
Aroclor 1248	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1254	"	**13.3**	-----	3.31	"	"	"	"	"	
Aroclor 1260	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1262	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1268	"	ND	-----	3.31	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*94.7%*		*16 - 149 %*	"		"	

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Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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PTF0829-28 (CS-12) **Other dry** **Sampled: 06/27/10 10:48**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	3.31	ug/kg wet	1x	10G0118	07/06/10 11:30	07/07/10 00:46	
Aroclor 1221	"	ND	-----	6.65	"	"	"	"	"	
Aroclor 1232	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1242	"	**11.0**	-----	3.31	"	"	"	"	"	
Aroclor 1248	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1254	"	**28.8**	-----	3.31	"	"	"	"	"	
Aroclor 1260	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1262	"	ND	-----	3.31	"	"	"	"	"	
Aroclor 1268	"	ND	-----	3.31	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*102%*		*16 - 149 %*	*"*		*"*	

PTF0829-29 (CS-13) **Other dry** **Sampled: 06/27/10 12:11** **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	66.2	ug/kg wet	20x	10G0118	07/06/10 11:30	07/07/10 10:59	
Aroclor 1221	"	ND	-----	133	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1242	"	**354**	-----	66.2	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1254	"	**387**	-----	66.2	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.2	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.2	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*145%*		*16 - 149 %*	*"*		*"*	

PTF0829-30 (CS-14) **Other dry** **Sampled: 06/27/10 12:14** **RL3**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Aroclor 1016	EPA 8082	ND	-----	66.5	ug/kg wet	20x	10G0118	07/06/10 11:30	07/07/10 11:21	
Aroclor 1221	"	ND	-----	134	"	"	"	"	"	
Aroclor 1232	"	ND	-----	66.5	"	"	"	"	"	
Aroclor 1242	"	**210**	-----	66.5	"	"	"	"	"	
Aroclor 1248	"	ND	-----	66.5	"	"	"	"	"	
Aroclor 1254	"	**233**	-----	66.5	"	"	"	"	"	
Aroclor 1260	"	ND	-----	66.5	"	"	"	"	"	
Aroclor 1262	"	ND	-----	66.5	"	"	"	"	"	
Aroclor 1268	"	ND	-----	66.5	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*78.6%*		*16 - 149 %*	*"*		*"*	***Z3***

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-31 (CS-15)			Other dry			Sampled: 06/27/10 12:30				
Aroclor 1016	EPA 8082	ND	-----	3.28	ug/kg wet	1x	10G0118	07/06/10 11:30	07/07/10 09:52	
Aroclor 1221	"	ND	-----	6.59	"	"	"	"	"	
Aroclor 1232	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1242	"	**9.02**	-----	3.28	"	"	"	"	"	
Aroclor 1248	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1254	"	**14.9**	-----	3.28	"	"	"	"	"	
Aroclor 1260	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1262	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1268	"	ND	-----	3.28	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*65.7%*		*16 - 149 %*	*"*		*"*	
PTF0829-32 (CS-16)			Other dry			Sampled: 06/27/10 12:33				
Aroclor 1016	EPA 8082	ND	-----	3.28	ug/kg wet	1x	10G0118	07/06/10 11:30	07/07/10 10:14	
Aroclor 1221	"	ND	-----	6.59	"	"	"	"	"	
Aroclor 1232	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1242	"	**10.9**	-----	3.28	"	"	"	"	"	
Aroclor 1248	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1254	"	**18.4**	-----	3.28	"	"	"	"	"	
Aroclor 1260	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1262	"	ND	-----	3.28	"	"	"	"	"	
Aroclor 1268	"	ND	-----	3.28	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*64.5%*		*16 - 149 %*	*"*		*"*	
PTF0829-33 (W-1)			Water			Sampled: 06/27/10 13:47				RL3
Aroclor 1016	EPA 8082	ND	-----	1.90	ug/l	4x	10G0020	07/01/10 11:18	07/12/10 23:01	
Aroclor 1221	"	ND	-----	3.81	"	"	"	"	"	
Aroclor 1232	"	ND	-----	1.90	"	"	"	"	"	
Aroclor 1242	"	**11.3**	-----	1.90	"	"	"	"	"	
Aroclor 1248	"	ND	-----	1.90	"	"	"	"	"	
Aroclor 1254	"	**5.00**	-----	1.90	"	"	"	"	"	
Aroclor 1260	"	ND	-----	1.90	"	"	"	"	"	
Surrogate(s): Decachlorobiphenyl				*NR*		*12 - 130 %*	*"*		*"*	***Z9***

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Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Conventional Chemistry Parameters per Standard Methods

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-33 (W-1)			**Water**			**Sampled: 06/27/10 13:47**				
pH	SM 4500-H B	**10.9**	-----		pH Units	1x	10F0919	06/29/10 11:33	06/29/10 11:45	**H1**

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Estella Rieben, Project Manager

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

TCLP Extraction Only

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0829-33 (W-1)			**Water**			**Sampled: 06/27/10 13:47**				
Extraction	EPA 1311	ND	-----	1.00	N/A	1x	10G0144	07/06/10 21:20	07/06/10 21:26	

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

TCLP Metals per EPA 1311/6000/7000 Series Methods - Laboratory Quality Control Results

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QC Batch: 10G0147 **Other wet Preparation Method: EPA 1311/3005**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10G0147-BLK1)										**Extracted: 07/06/10 22:55**				
Arsenic	1311/6020	ND	---	0.100	mg/l	1x	--	--	--	--	--	--	07/07/10 18:13	
Barium	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Cadmium	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Chromium	"	ND	---	0.200	"	"	--	--	--	--	--	--	"	
Lead	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Selenium	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Silver	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
LCS (10G0147-BS1)										**Extracted: 07/06/10 22:55**				
Arsenic	1311/6020	9.95	---	0.100	mg/l	1x	--	10.0	99.5%	(80-120)	--	--	07/07/10 18:17	
Barium	"	9.65	---	0.100	"	"	--	"	96.5%	"	--	--	"	
Cadmium	"	9.99	---	0.100	"	"	--	"	99.9%	"	--	--	"	
Chromium	"	9.81	---	0.200	"	"	--	"	98.1%	"	--	--	"	
Lead	"	9.91	---	0.100	"	"	--	"	99.1%	"	--	--	"	
Selenium	"	10.0	---	0.100	"	"	--	"	100%	"	--	--	"	
Silver	"	5.10	---	0.100	"	"	--	5.00	102%	"	--	--	"	
Matrix Spike (10G0147-MS1)				**QC Source: PTF0823-01**						**Extracted: 07/06/10 22:55**				
Arsenic	1311/6020	11.0	---	0.100	mg/l	1x	0.0380	10.0	110%	(75-125)	--	--	07/07/10 18:32	
Barium	"	9.50	---	0.100	"	"	ND	"	95.0%	"	--	--	"	
Cadmium	"	10.2	---	0.100	"	"	ND	"	102%	"	--	--	"	
Chromium	"	9.89	---	0.200	"	"	ND	"	98.9%	"	--	--	"	
Lead	"	9.08	---	0.100	"	"	0.0440	"	90.4%	"	--	--	"	
Selenium	"	11.7	---	0.100	"	"	0.147	"	116%	"	--	--	"	
Silver	"	4.92	---	0.100	"	"	ND	5.00	98.4%	(50-150)	--	--	"	

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

TCLP Mercury per EPA Methods 1311/7470A - Laboratory Quality Control Results

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QC Batch: 10G0180 **Other wet Preparation Method: EPA 1311/7470A**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10G0180-BLK1)								**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	ND	---	0.000200	mg/l	1x	--	--	--	--	--	--	07/07/10 17:11	
LCS (10G0180-BS1)								**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	0.00498	---	0.000200	mg/l	1x	--	0.00500	99.7%	(85-115)	--	--	07/07/10 17:14	
LCS Dup (10G0180-BSD1)								**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	0.00496	---	0.000200	mg/l	1x	--	0.00500	99.3%	(85-115)	0.428%	(20)	07/07/10 17:17	
Duplicate (10G0180-DUP1)				**QC Source: PTF0794-06**				**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	ND	---	0.0800	mg/l	1x	ND	--	--	--	NR	(20)	07/07/10 17:24	
Duplicate (10G0180-DUP2)				**QC Source: PTF0829-33**				**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	ND	---	0.0800	mg/l	1x	ND	--	--	--	NR	(20)	07/07/10 17:27	
Matrix Spike (10G0180-MS1)				**QC Source: PTF0794-06**				**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	1.95	---	0.0800	mg/l	1x	ND	2.00	97.7%	(75-125)	--	--	07/07/10 17:19	
Matrix Spike (10G0180-MS2)				**QC Source: PTF0829-33**				**Extracted: 07/07/10 15:44**						
Mercury	1311/7470A	1.90	---	0.0800	mg/l	1x	ND	2.00	94.8%	(75-125)	--	--	07/07/10 17:22	

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10F0915 **Soil Preparation Method: EPA 3550**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10F0915-BLK1)								**Extracted: 06/29/10 12:00**						
Aroclor 1016	EPA 8082	ND	---	3.33	ug/kg wet	1x	--	--	--	--	--	--	07/07/10 11:44	
Aroclor 1221	"	ND	---	6.70	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	3.33	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 59.7%*		*Limits: 16-149%*		*"*							*07/07/10 11:44*	
LCS (10F0915-BS1)								**Extracted: 06/29/10 12:00**						
Aroclor 1016	EPA 8082	24.9	---	3.33	ug/kg wet	1x	--	33.3	74.7%	(57-135)	--	--	07/07/10 12:06	
Aroclor 1260	"	23.6	---	3.33	"	"	--	"	70.7%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 76.6%*		*Limits: 16-149%*		*"*							*07/07/10 12:06*	
Matrix Spike (10F0915-MS1)				**QC Source: PTF0829-01**				**Extracted: 06/29/10 12:00**						M1
Aroclor 1016	EPA 8082	ND	---	25.8	ug/kg wet	2x	ND	64.7	NR	(37-145)	--	--	07/07/10 18:36	IR
Aroclor 1260	"	118	---	25.8	"	"	ND	"	183%	(25-144)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 89.0%*		*Limits: 16-149%*		*"*							*07/07/10 18:36*	*N1*
Matrix Spike (10F0915-MS2)				**QC Source: PTF0829-01**				**Extracted: 06/29/10 12:00**						M1
Aroclor 1016	EPA 8082	285	---	64.6	ug/kg wet	5x	ND	64.7	440%	(37-145)	--	--	07/08/10 19:42	
Aroclor 1260	"	110	---	64.6	"	"	ND	"	170%	(25-144)	--	--	"	IR
Surrogate(s): Decachlorobiphenyl		*Recovery: 74.9%*		*Limits: 16-149%*		*"*							*07/08/10 19:42*	*IR*
Matrix Spike Dup (10F0915-MSD1)				**QC Source: PTF0829-01**				**Extracted: 06/29/10 12:00**						M1
Aroclor 1016	EPA 8082	ND	---	26.5	ug/kg wet	2x	ND	66.3	NR	(37-145)		(26)	07/07/10 19:02	IR
Aroclor 1260	"	189	---	26.5	"	"	ND	"	284%	(25-144)	45.7%	(30)	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 88.4%*		*Limits: 16-149%*		*"*							*07/07/10 19:02*	*N1*
Matrix Spike Dup (10F0915-MSD2)				**QC Source: PTF0829-01**				**Extracted: 06/29/10 12:00**						M1
Aroclor 1016	EPA 8082	615	---	66.2	ug/kg wet	5x	ND	66.3	927%	(37-145)	73.4%	(26)	07/08/10 20:05	
Aroclor 1260	"	187	---	66.2	"	"	ND	"	282%	(25-144)	51.8%	(30)	"	IR
Surrogate(s): Decachlorobiphenyl		*Recovery: 93.8%*		*Limits: 16-149%*		*"*							*07/08/10 20:05*	*IR*

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

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QC Batch: 10G0020 Water Preparation Method: EPA 3510/600 Series

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10G0020-BLK1)								**Extracted: 07/01/10 11:18**						
Aroclor 1016	EPA 8082	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	07/09/10 17:39	
Aroclor 1221	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 39.0%*		*Limits: 12-130%*		*"*							*07/09/10 17:39*	
LCS (10G0020-BS2)								**Extracted: 07/01/10 11:18**						
Aroclor 1016	EPA 8082	3.99	---	0.500	ug/l	1x	--	5.00	79.8%	(50-114)	--	--	07/09/10 18:01	
Aroclor 1260	"	3.15	---	0.500	"	"	--	"	62.9%	(8-127)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 48.7%*		*Limits: 12-130%*		*"*							*07/09/10 18:01*	

QC Batch: 10G0118 Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10G0118-BLK1)								**Extracted: 07/06/10 11:30**						
Aroclor 1016	EPA 8082	ND	---	3.31	ug/kg wet	1x	--	--	--	--	--	--	07/07/10 01:08	
Aroclor 1221	"	ND	---	6.65	"	"	--	--	--	--	--	--	"	
Aroclor 1232	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Aroclor 1242	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Aroclor 1248	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Aroclor 1254	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Aroclor 1260	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Aroclor 1262	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Aroclor 1268	"	ND	---	3.31	"	"	--	--	--	--	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 82.9%*		*Limits: 16-149%*		*"*							*07/07/10 01:08*	
LCS (10G0118-BS1)								**Extracted: 07/06/10 11:30**						MNR
Aroclor 1016	EPA 8082	37.7	---	3.32	ug/kg wet	1x	--	33.3	113%	(57-135)	--	--	07/07/10 01:31	
Aroclor 1260	"	40.4	---	3.32	"	"	--	"	121%	(60-135)	--	--	"	
Surrogate(s): Decachlorobiphenyl		*Recovery: 122%*		*Limits: 16-149%*		*"*							*07/07/10 01:31*	

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GeoPro Geologic Services	Project Name:	**Calbag PCB Surface Washing Pilot Study**	
P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Conventional Chemistry Parameters per Standard Methods - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10F0919 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (10F0919-DUP1)					**QC Source: PTF0846-01**				**Extracted: 06/29/10 11:33**					
pH	SM 4500-H B	5.63	---		pH Units	1x	5.62	--	--	--	0.178%	(25)	06/29/10 11:45	

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P.O. Box 26	Project Number:	100212	Report Created:
Battle Ground, WA 98604	Project Manager:	Richard Kent	11/03/10 15:03

Notes and Definitions

Report Specific Notes:

- H1 - Sample analysis performed past the method-specified holding time per client's approval.
- IR - Data Rejected. No Reportable Results available.
- M1 - The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- MNR - No results were reported for the MS/MSD. The sample used for the MS/MSD required dilution due to the sample matrix. Because of this, the spike compounds were diluted below the detection limit.
- N1 - See case narrative.
- RL1 - Reporting limit raised due to sample matrix effects.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
- Z9 - Unable to calculate surrogate recovery due to matrix interference.
- ZX - Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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CERTIFICATION SUMMARY

TestAmerica Portland

Method	Matrix	Oregon
1311/6020	Water	X
1311/7470A	Water	X
EPA 1311	Water	X
EPA 8082	Other dry	X
EPA 8082	Water	X
None	Other dry	
SM 4500-H B	Water	X

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GC Semivolatile Organic Compounds

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ANALYSES DATA PACKAGE COVER PAGE

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study

Client Sample Id:	Lab Sample Id:
AS-1	PTF0829-01
AS-2	PTF0829-02
AS-3	PTF0829-03
AS-4	PTF0829-04
AS-5	PTF0829-05
AS-6	PTF0829-06
AS-7	PTF0829-07
AS-8	PTF0829-08
AS-9	PTF0829-09
AS-10	PTF0829-10
AS-11	PTF0829-11
AS-12	PTF0829-12
AS-13	PTF0829-13
AS-14	PTF0829-14
AS-15	PTF0829-15
AS-16	PTF0829-16
CS-1	PTF0829-17
CS-2	PTF0829-18
CS-3	PTF0829-19
CS-4	PTF0829-20
CS-5	PTF0829-21
CS-6	PTF0829-22
CS-7	PTF0829-23
CS-8	PTF0829-24
CS-9	PTF0829-25
CS-10	PTF0829-26
CS-11	PTF0829-27
CS-12	PTF0829-28
CS-13	PTF0829-29
CS-14	PTF0829-30
CS-15	PTF0829-31
CS-16	PTF0829-32

ANALYSES DATA PACKAGE COVER PAGE

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study

Client Sample Id:	Lab Sample Id:
W-1	PTF0829-33

THE LEADER IN ENVIRONMENTAL TESTING

GC Semivolatile Organic Compounds

Target Analyte Results Summaries

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-1

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-01	File ID:	07081013.D		
Sampled:	06/27/10 09:50	Prepared:	06/29/10 12:00	Analyzed:	07/08/10 15:37		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.15 g / 4 ml		
Batch:	10F0915	Sequence:	T002133	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.5	DU
11104-28-2	Aroclor 1221	2	53.3	DU
11141-16-5	Aroclor 1232	2	26.5	DU
53469-21-9	Aroclor 1242	2	164	D
12672-29-6	Aroclor 1248	2	26.5	DU
11097-69-1	Aroclor 1254	2	81.8	D
11096-82-5	Aroclor 1260	2	26.5	DU
37324-23-5	Aroclor 1262	2	26.5	DU
11100-14-4	Aroclor 1268	2	26.5	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.63	4.53	68.3	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-2

Laboratory: TestAmerica Portland | SDG: PTF0829
Client: GeoPro Geologic Services | Project: Calbag PCB Surface Washing Pilot Study
Matrix: Other dry | Laboratory ID: PTF0829-02 | File ID: 07081014.D
Sampled: 06/27/10 11:40 | Prepared: 06/29/10 12:00 | Analyzed: 07/08/10 15:37
Solids: | Preparation: EPA 3550 | Initial/Final: 30.21 g / 4 ml
Batch: 10F0915 | Sequence: T002132 | Calibration: P10G042 | Instrument: GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.5	DU
11104-28-2	Aroclor 1221	2	53.2	DU
11141-16-5	Aroclor 1232	2	26.5	DU
53469-21-9	Aroclor 1242	2	26.5	DU
12672-29-6	Aroclor 1248	2	26.5	DU
11097-69-1	Aroclor 1254	2	42.2	D
11096-82-5	Aroclor 1260	2	26.5	DU
37324-23-5	Aroclor 1262	2	26.5	DU
11100-14-4	Aroclor 1268	2	26.5	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.62	6.41	96.8	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

AS-3

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-03	File ID:	07081015.D		
Sampled:	06/27/10 12:40	Prepared:	06/29/10 12:00	Analyzed:	07/08/10 16:00		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.57 g / 4 ml		
Batch:	10F0915	Sequence:	T002133	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	4	52.3	DU
11104-28-2	Aroclor 1221	4	105	DU
11141-16-5	Aroclor 1232	4	52.3	DU
53469-21-9	Aroclor 1242	4	246	D
12672-29-6	Aroclor 1248	4	52.3	DU
11097-69-1	Aroclor 1254	4	165	D
11096-82-5	Aroclor 1260	4	52.3	DU
37324-23-5	Aroclor 1262	4	52.3	DU
11100-14-4	Aroclor 1268	4	52.3	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.54	4.63	70.7	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-4

Laboratory: TestAmerica Portland   SDG: PTF0829

Client: GeoPro Geologic Services   Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry   Laboratory ID: PTF0829-04   File ID: 07081016.D

Sampled: 06/27/10 12:50   Prepared: 06/29/10 12:00   Analyzed: 07/08/10 16:00

Solids: Preparation: EPA 3550   Initial/Final: 30.07 g / 4 ml

Batch: 10F0915   Sequence: T002132   Calibration: P10G042   Instrument: GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.6	DU
11104-28-2	Aroclor 1221	2	53.5	DU
11141-16-5	Aroclor 1232	2	26.6	DU
53469-21-9	Aroclor 1242	2	26.6	DU
12672-29-6	Aroclor 1248	2	26.6	DU
11097-69-1	Aroclor 1254	2	35.4	D
11096-82-5	Aroclor 1260	2	26.6	DU
37324-23-5	Aroclor 1262	2	26.6	DU
11100-14-4	Aroclor 1268	2	26.6	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.65	9.96	150	16 - 149	*

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-5

Laboratory: TestAmerica Portland   SDG: PTF0829

Client: GeoPro Geologic Services   Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry   Laboratory ID: PTF0829-05   File ID: 07081017.D

Sampled: 06/27/10 09:51   Prepared: 06/29/10 12:00   Analyzed: 07/08/10 16:23

Solids: Preparation: EPA 3550   Initial/Final: 30.56 g / 4 ml

Batch: 10F0915   Sequence: T002133   Calibration: P10G039   Instrument: GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	4	52.3	DU
11104-28-2	Aroclor 1221	4	105	DU
11141-16-5	Aroclor 1232	4	52.3	DU
53469-21-9	Aroclor 1242	4	214	D
12672-29-6	Aroclor 1248	4	52.3	DU
11097-69-1	Aroclor 1254	4	132	D
11096-82-5	Aroclor 1260	4	52.3	DU
37324-23-5	Aroclor 1262	4	52.3	DU
11100-14-4	Aroclor 1268	4	52.3	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.54	5.17	79.0	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-6

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-06	File ID:	07081018.D		
Sampled:	06/27/10 12:06	Prepared:	06/29/10 12:00	Analyzed:	07/08/10 16:23		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.08 g / 4 ml		
Batch:	10F0915	Sequence:	T002132	Calibration:	P10G042	Instrument:	GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.6	DU
11104-28-2	Aroclor 1221	2	53.5	DU
11141-16-5	Aroclor 1232	2	26.6	DU
53469-21-9	Aroclor 1242	2	26.6	DU
12672-29-6	Aroclor 1248	2	26.6	DU
11097-69-1	Aroclor 1254	2	104	D
11096-82-5	Aroclor 1260	2	26.6	DU
37324-23-5	Aroclor 1262	2	26.6	DU
11100-14-4	Aroclor 1268	2	26.6	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.65	6.76	102	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-7

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-07	File ID:	07071021.D		
Sampled:	06/27/10 13:03	Prepared:	06/29/10 12:00	Analyzed:	07/07/10 12:52		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.02 g / 4 ml		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	5	66.6	DU
11104-28-2	Aroclor 1221	5	134	DU
11141-16-5	Aroclor 1232	5	66.6	DU
53469-21-9	Aroclor 1242	5	331	D
12672-29-6	Aroclor 1248	5	66.6	DU
11097-69-1	Aroclor 1254	5	226	D
11096-82-5	Aroclor 1260	5	66.6	DU
37324-23-5	Aroclor 1262	5	66.6	DU
11100-14-4	Aroclor 1268	5	66.6	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.66	6.35	95.3	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-8

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry Laboratory ID: PTF0829-08 File ID: 07081020.D

Sampled: 06/27/10 13:03 Prepared: 06/29/10 12:00 Analyzed: 07/08/10 16:46

Solids: Preparation: EPA 3550 Initial/Final: 30.72 g / 4 ml

Batch: 10F0915 Sequence: T002132 Calibration: P10G042 Instrument: GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.0	DU
11104-28-2	Aroclor 1221	2	52.3	DU
11141-16-5	Aroclor 1232	2	26.0	DU
53469-21-9	Aroclor 1242	2	26.0	DU
12672-29-6	Aroclor 1248	2	26.0	DU
11097-69-1	Aroclor 1254	2	91.8	D
11096-82-5	Aroclor 1260	2	26.0	DU
37324-23-5	Aroclor 1262	2	26.0	DU
11100-14-4	Aroclor 1268	2	26.0	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.51	9.99	153	16 - 149	*

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-9

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry Laboratory ID: PTF0829-09 File ID: 07071022.D

Sampled: 06/27/10 09:53 Prepared: 06/29/10 12:00 Analyzed: 07/07/10 13:15

Solids: Preparation: EPA 3550 Initial/Final: 30.31 g / 4 ml

Batch: 10F0915 Sequence: T002112 Calibration: P10G039 Instrument: GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	5	65.9	DU
11104-28-2	Aroclor 1221	5	133	DU
11141-16-5	Aroclor 1232	5	65.9	DU
53469-21-9	Aroclor 1242	5	338	D
12672-29-6	Aroclor 1248	5	65.9	DU
11097-69-1	Aroclor 1254	5	249	D
11096-82-5	Aroclor 1260	5	65.9	DU
37324-23-5	Aroclor 1262	5	65.9	DU
11100-14-4	Aroclor 1268	5	65.9	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.60	5.70	86.3	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-10

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-10	File ID:	07071023.D		
Sampled:	06/27/10 09:51	Prepared:	06/29/10 12:00	Analyzed:	07/07/10 13:41		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.13 g / 4 ml		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	5	66.3	DU
11104-28-2	Aroclor 1221	5	133	DU
11141-16-5	Aroclor 1232	5	66.3	DU
53469-21-9	Aroclor 1242	5	331	D
12672-29-6	Aroclor 1248	5	66.3	DU
11097-69-1	Aroclor 1254	5	222	D
11096-82-5	Aroclor 1260	5	66.3	DU
37324-23-5	Aroclor 1262	5	66.3	DU
11100-14-4	Aroclor 1268	5	66.3	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.64	4.93	74.3	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

AS-11

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-11	File ID:	07091018.D		
Sampled:	06/27/10 11:41	Prepared:	06/29/10 12:00	Analyzed:	07/09/10 16:54		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.13 g / 4 ml		
Batch:	10F0915	Sequence:	T002147	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	4	53.1	DU
11104-28-2	Aroclor 1221	4	107	DU
11141-16-5	Aroclor 1232	4	53.1	DU
53469-21-9	Aroclor 1242	4	53.1	DU
12672-29-6	Aroclor 1248	4	53.1	DU
11097-69-1	Aroclor 1254	4	69.5	D
11096-82-5	Aroclor 1260	4	53.1	DU
37324-23-5	Aroclor 1262	4	53.1	DU
11100-14-4	Aroclor 1268	4	53.1	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.64	4.72	71.2	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-12

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-12	File ID:	07091019.D		
Sampled:	06/27/10 11:37	Prepared:	06/29/10 12:00	Analyzed:	07/09/10 17:17		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.08 g / 4 ml		
Batch:	10F0915	Sequence:	T002147	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	4	53.1	DU
11104-28-2	Aroclor 1221	4	107	DU
11141-16-5	Aroclor 1232	4	53.1	DU
53469-21-9	Aroclor 1242	4	53.1	DU
12672-29-6	Aroclor 1248	4	53.1	DU
11097-69-1	Aroclor 1254	4	62.2	D
11096-82-5	Aroclor 1260	4	53.1	DU
37324-23-5	Aroclor 1262	4	53.1	DU
11100-14-4	Aroclor 1268	4	53.1	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.65	4.59	69.0	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

AS-13

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-13	File ID:	07071024.D		
Sampled:	06/27/10 13:28	Prepared:	06/29/10 12:00	Analyzed:	07/07/10 14:08		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.53 g / 4 ml		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	5	65.4	DU
11104-28-2	Aroclor 1221	5	132	DU
11141-16-5	Aroclor 1232	5	65.4	DU
53469-21-9	Aroclor 1242	5	332	D
12672-29-6	Aroclor 1248	5	65.4	DU
11097-69-1	Aroclor 1254	5	245	D
11096-82-5	Aroclor 1260	5	65.4	DU
37324-23-5	Aroclor 1262	5	65.4	DU
11100-14-4	Aroclor 1268	5	65.4	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.55	5.21	79.6	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-14

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-14	File ID:	07071025.D		
Sampled:	06/27/10 13:25	Prepared:	06/29/10 12:00	Analyzed:	07/07/10 14:34		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.74 g / 4 ml		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	5	65.0	DU
11104-28-2	Aroclor 1221	5	131	DU
11141-16-5	Aroclor 1232	5	65.0	DU
53469-21-9	Aroclor 1242	5	279	D
12672-29-6	Aroclor 1248	5	65.0	DU
11097-69-1	Aroclor 1254	5	196	D
11096-82-5	Aroclor 1260	5	65.0	DU
37324-23-5	Aroclor 1262	5	65.0	DU
11100-14-4	Aroclor 1268	5	65.0	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.51	5.20	80.0	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-15

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry Laboratory ID: PTF0829-15 File ID: 07131013.D

Sampled: 06/27/10 13:35 Prepared: 06/29/10 12:00 Analyzed: 07/13/10 14:01

Solids: Preparation: EPA 3550 Initial/Final: 30.07 g / 4 ml

Batch: 10F0915 Sequence: T002178 Calibration: P10J009 Instrument: GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.6	DU
11104-28-2	Aroclor 1221	2	53.5	DU
11141-16-5	Aroclor 1232	2	26.6	DU
53469-21-9	Aroclor 1242	2	26.6	DU
12672-29-6	Aroclor 1248	2	26.6	DU
11097-69-1	Aroclor 1254	2	32.1	D
11096-82-5	Aroclor 1260	2	26.6	DU
37324-23-5	Aroclor 1262	2	26.6	DU
11100-14-4	Aroclor 1268	2	26.6	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.65	5.25	79.0	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

AS-16

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-16	File ID:	07131015.D		
Sampled:	06/27/10 13:39	Prepared:	06/29/10 12:00	Analyzed:	07/13/10 14:24		
Solids:		Preparation:	EPA 3550	Initial/Final:	30.39 g / 4 ml		
Batch:	10F0915	Sequence:	T002178	Calibration:	P10J009	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	26.3	DU
11104-28-2	Aroclor 1221	2	52.9	DU
11141-16-5	Aroclor 1232	2	26.3	DU
53469-21-9	Aroclor 1242	2	26.3	DU
12672-29-6	Aroclor 1248	2	26.3	DU
11097-69-1	Aroclor 1254	2	32.7	D
11096-82-5	Aroclor 1260	2	26.3	DU
37324-23-5	Aroclor 1262	2	26.3	DU
11100-14-4	Aroclor 1268	2	26.3	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	6.58	4.29	65.2	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-1

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry Laboratory ID: PTF0829-17 File ID: 07071026.D

Sampled: 06/27/10 09:20 Prepared: 06/29/10 12:00 Analyzed: 07/07/10 15:00

Solids: Preparation: EPA 3550 Initial/Final: 60.18 g / 2 ml

Batch: 10F0915 Sequence: T002112 Calibration: P10G039 Instrument: GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.4	DU
11104-28-2	Aroclor 1221	20	134	DU
11141-16-5	Aroclor 1232	20	66.4	DU
53469-21-9	Aroclor 1242	20	227	D
12672-29-6	Aroclor 1248	20	66.4	DU
11097-69-1	Aroclor 1254	20	200	D
11096-82-5	Aroclor 1260	20	66.4	DU
37324-23-5	Aroclor 1262	20	66.4	DU
11100-14-4	Aroclor 1268	20	66.4	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	1.33	40.2	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-2

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-18	File ID:	07081019.D		
Sampled:	06/27/10 10:00	Prepared:	06/29/10 12:00	Analyzed:	07/08/10 16:46		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.32 g / 2 ml		
Batch:	10F0915	Sequence:	T002133	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	10	33.1	DU
11104-28-2	Aroclor 1221	10	66.6	DU
11141-16-5	Aroclor 1232	10	33.1	DU
53469-21-9	Aroclor 1242	10	50.6	D
12672-29-6	Aroclor 1248	10	33.1	DU
11097-69-1	Aroclor 1254	10	91.1	D
11096-82-5	Aroclor 1260	10	33.1	DU
37324-23-5	Aroclor 1262	10	33.1	DU
11100-14-4	Aroclor 1268	10	33.1	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	2.00	60.3	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-3

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-19	File ID:	07071027.D		
Sampled:	06/27/10 10:25	Prepared:	06/29/10 12:00	Analyzed:	07/07/10 15:27		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.24 g / 2 ml		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.3	DU
11104-28-2	Aroclor 1221	20	133	DU
11141-16-5	Aroclor 1232	20	66.3	DU
53469-21-9	Aroclor 1242	20	358	D
12672-29-6	Aroclor 1248	20	66.3	DU
11097-69-1	Aroclor 1254	20	400	D
11096-82-5	Aroclor 1260	20	66.3	DU
37324-23-5	Aroclor 1262	20	66.3	DU
11100-14-4	Aroclor 1268	20	66.3	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	2.36	71.1	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-4

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-20	File ID:	07071029.D		
Sampled:	06/27/10 11:05	Prepared:	06/29/10 12:00	Analyzed:	07/07/10 15:54		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.04 g / 2 ml		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.6	DU
11104-28-2	Aroclor 1221	20	134	DU
11141-16-5	Aroclor 1232	20	66.6	DU
53469-21-9	Aroclor 1242	20	189	D
12672-29-6	Aroclor 1248	20	66.6	DU
11097-69-1	Aroclor 1254	20	294	D
11096-82-5	Aroclor 1260	20	66.6	DU
37324-23-5	Aroclor 1262	20	66.6	DU
11100-14-4	Aroclor 1268	20	66.6	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.33	2.00	59.9	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-5

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-21	File ID:	07061033.D		
Sampled:	06/27/10 09:24	Prepared:	07/06/10 11:30	Analyzed:	07/06/10 22:11		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.32 g / 2 ml		
Batch:	10G0118	Sequence:	T002104	Calibration:	P10G042	Instrument:	GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.2	DU
11104-28-2	Aroclor 1221	20	133	DU
11141-16-5	Aroclor 1232	20	66.2	DU
53469-21-9	Aroclor 1242	20	108	D
12672-29-6	Aroclor 1248	20	66.2	DU
11097-69-1	Aroclor 1254	20	628	D
11096-82-5	Aroclor 1260	20	66.2	DU
37324-23-5	Aroclor 1262	20	66.2	DU
11100-14-4	Aroclor 1268	20	66.2	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	3.56	107	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-6

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-22	File ID:	07071015.D		
Sampled:	06/27/10 10:04	Prepared:	07/06/10 11:30	Analyzed:	07/07/10 10:37		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.16 g / 2 ml		
Batch:	10G0118	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	2	6.64	DU
11104-28-2	Aroclor 1221	2	13.4	DU
11141-16-5	Aroclor 1232	2	6.64	DU
53469-21-9	Aroclor 1242	2	6.64	DU
12672-29-6	Aroclor 1248	2	6.64	DU
11097-69-1	Aroclor 1254	2	43.7	D
11096-82-5	Aroclor 1260	2	6.64	DU
37324-23-5	Aroclor 1262	2	6.64	DU
11100-14-4	Aroclor 1268	2	6.64	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	2.09	62.7	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-7

Laboratory: TestAmerica Portland | SDG: PTF0829

Client: GeoPro Geologic Services | Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry | Laboratory ID: PTF0829-23 | File ID: 07061035.D

Sampled: 06/27/10 10:48 | Prepared: 07/06/10 11:30 | Analyzed: 07/06/10 22:56

Solids: | Preparation: EPA 3550 | Initial/Final: 60.29 g / 2 ml

Batch: 10G0118 | Sequence: T002104 | Calibration: P10G042 | Instrument: GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.3	DU
11104-28-2	Aroclor 1221	20	133	DU
11141-16-5	Aroclor 1232	20	66.3	DU
53469-21-9	Aroclor 1242	20	98.4	D
12672-29-6	Aroclor 1248	20	66.3	DU
11097-69-1	Aroclor 1254	20	353	D
11096-82-5	Aroclor 1260	20	66.3	DU
37324-23-5	Aroclor 1262	20	66.3	DU
11100-14-4	Aroclor 1268	20	66.3	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	2.80	84.4	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-8

Laboratory: TestAmerica Portland   SDG: PTF0829

Client: GeoPro Geologic Services   Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry   Laboratory ID: PTF0829-24   File ID: 07061036.D

Sampled: 06/27/10 11:57   Prepared: 07/06/10 11:30   Analyzed: 07/06/10 23:18

Solids: Preparation: EPA 3550   Initial/Final: 60.07 g / 2 ml

Batch: 10G0118   Sequence: T002104   Calibration: P10G042   Instrument: GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	1	3.33	U
11104-28-2	Aroclor 1221	1	6.69	U
11141-16-5	Aroclor 1232	1	3.33	U
53469-21-9	Aroclor 1242	1	3.33	U
12672-29-6	Aroclor 1248	1	3.33	U
11097-69-1	Aroclor 1254	1	3.33	U
11096-82-5	Aroclor 1260	1	3.33	U
37324-23-5	Aroclor 1262	1	3.33	U
11100-14-4	Aroclor 1268	1	3.33	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.33	2.60	78.0	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-9

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-25	File ID:	07061037.D		
Sampled:	06/27/10 09:30	Prepared:	07/06/10 11:30	Analyzed:	07/06/10 23:40		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.77 g / 2 ml		
Batch:	10G0118	Sequence:	T002104	Calibration:	P10G042	Instrument:	GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	65.8	DU
11104-28-2	Aroclor 1221	20	132	DU
11141-16-5	Aroclor 1232	20	65.8	DU
53469-21-9	Aroclor 1242	20	224	D
12672-29-6	Aroclor 1248	20	65.8	DU
11097-69-1	Aroclor 1254	20	355	D
11096-82-5	Aroclor 1260	20	65.8	DU
37324-23-5	Aroclor 1262	20	65.8	DU
11100-14-4	Aroclor 1268	20	65.8	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.29	4.43	135	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-10

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-26	File ID:	07061038.D		
Sampled:	06/27/10 09:35	Prepared:	07/06/10 11:30	Analyzed:	07/07/10 00:02		
Solids:		Preparation:	EPA 3550	Initial/Final:	61.02 g / 2 ml		
Batch:	10G0118	Sequence:	T002104	Calibration:	P10G042	Instrument:	GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	65.5	DU
11104-28-2	Aroclor 1221	20	132	DU
11141-16-5	Aroclor 1232	20	65.5	DU
53469-21-9	Aroclor 1242	20	264	D
12672-29-6	Aroclor 1248	20	65.5	DU
11097-69-1	Aroclor 1254	20	333	D
11096-82-5	Aroclor 1260	20	65.5	DU
37324-23-5	Aroclor 1262	20	65.5	DU
11100-14-4	Aroclor 1268	20	65.5	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.28	5.24	160	16 - 149	*

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-11

Laboratory: TestAmerica Portland   SDG: PTF0829

Client: GeoPro Geologic Services   Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry   Laboratory ID: PTF0829-27   File ID: 07061039.D

Sampled: 06/27/10 10:52   Prepared: 07/06/10 11:30   Analyzed: 07/07/10 00:24

Solids: Preparation: EPA 3550   Initial/Final: 60.3 g / 2 ml

Batch: 10G0118   Sequence: T002104   Calibration: P10G042   Instrument: GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	1	3.31	U
11104-28-2	Aroclor 1221	1	6.67	U
11141-16-5	Aroclor 1232	1	3.31	U
53469-21-9	Aroclor 1242	1	5.18	
12672-29-6	Aroclor 1248	1	3.31	U
11097-69-1	Aroclor 1254	1	13.3	
11096-82-5	Aroclor 1260	1	3.31	U
37324-23-5	Aroclor 1262	1	3.31	U
11100-14-4	Aroclor 1268	1	3.31	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	3.14	94.7	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-12

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-28	File ID:	07061040.D		
Sampled:	06/27/10 10:48	Prepared:	07/06/10 11:30	Analyzed:	07/07/10 00:46		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.44 g / 2 ml		
Batch:	10G0118	Sequence:	T002104	Calibration:	P10G042	Instrument:	GC4 Dual F

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	1	3.31	U
11104-28-2	Aroclor 1221	1	6.65	U
11141-16-5	Aroclor 1232	1	3.31	U
53469-21-9	Aroclor 1242	1	11.0	
12672-29-6	Aroclor 1248	1	3.31	U
11097-69-1	Aroclor 1254	1	28.8	
11096-82-5	Aroclor 1260	1	3.31	U
37324-23-5	Aroclor 1262	1	3.31	U
11100-14-4	Aroclor 1268	1	3.31	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.31	3.37	102	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-13

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other dry Laboratory ID: PTF0829-29 File ID: 07071016.D

Sampled: 06/27/10 12:11 Prepared: 07/06/10 11:30 Analyzed: 07/07/10 10:59

Solids: Preparation: EPA 3550 Initial/Final: 60.33 g / 2 ml

Batch: 10G0118 Sequence: T002112 Calibration: P10G039 Instrument: GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.2	DU
11104-28-2	Aroclor 1221	20	133	DU
11141-16-5	Aroclor 1232	20	66.2	DU
53469-21-9	Aroclor 1242	20	354	D
12672-29-6	Aroclor 1248	20	66.2	DU
11097-69-1	Aroclor 1254	20	387	D
11096-82-5	Aroclor 1260	20	66.2	DU
37324-23-5	Aroclor 1262	20	66.2	DU
11100-14-4	Aroclor 1268	20	66.2	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.32	4.80	145	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-14

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-30	File ID:	07071017.D		
Sampled:	06/27/10 12:14	Prepared:	07/06/10 11:30	Analyzed:	07/07/10 11:21		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.07 g / 2 ml		
Batch:	10G0118	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	20	66.5	DU
11104-28-2	Aroclor 1221	20	134	DU
11141-16-5	Aroclor 1232	20	66.5	DU
53469-21-9	Aroclor 1242	20	210	D
12672-29-6	Aroclor 1248	20	66.5	DU
11097-69-1	Aroclor 1254	20	233	D
11096-82-5	Aroclor 1260	20	66.5	DU
37324-23-5	Aroclor 1262	20	66.5	DU
11100-14-4	Aroclor 1268	20	66.5	DU

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.33	2.62	78.6	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

CS-15

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-31	File ID:	07071013.D		
Sampled:	06/27/10 12:30	Prepared:	07/06/10 11:30	Analyzed:	07/07/10 09:52		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.98 g / 2 ml		
Batch:	10G0118	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	1	3.28	U
11104-28-2	Aroclor 1221	1	6.59	U
11141-16-5	Aroclor 1232	1	3.28	U
53469-21-9	Aroclor 1242	1	9.02	
12672-29-6	Aroclor 1248	1	3.28	U
11097-69-1	Aroclor 1254	1	14.9	
11096-82-5	Aroclor 1260	1	3.28	U
37324-23-5	Aroclor 1262	1	3.28	U
11100-14-4	Aroclor 1268	1	3.28	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.28	2.16	65.7	16 - 149	

* Values outside of QC limits

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 8082

CS-16

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Other dry	Laboratory ID:	PTF0829-32	File ID:	07071014.D		
Sampled:	06/27/10 12:33	Prepared:	07/06/10 11:30	Analyzed:	07/07/10 10:14		
Solids:		Preparation:	EPA 3550	Initial/Final:	60.97 g / 2 ml		
Batch:	10G0118	Sequence:	T002112	Calibration:	P10G039	Instrument:	GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	1	3.28	U
11104-28-2	Aroclor 1221	1	6.59	U
11141-16-5	Aroclor 1232	1	3.28	U
53469-21-9	Aroclor 1242	1	10.9	
12672-29-6	Aroclor 1248	1	3.28	U
11097-69-1	Aroclor 1254	1	18.4	
11096-82-5	Aroclor 1260	1	3.28	U
37324-23-5	Aroclor 1262	1	3.28	U
11100-14-4	Aroclor 1268	1	3.28	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.28	2.12	64.5	16 - 149	

* Values outside of QC limits

Form 1

ORGANIC ANALYSIS DATA SHEET

EPA 8082

W-1

Laboratory: TestAmerica Portland   SDG: PTF0829

Client: GeoPro Geologic Services   Project: Calbag PCB Surface Washing Pilot Study

Matrix: Water   Laboratory ID: PTF0829-33   File ID: 07121033.D

Sampled: 06/27/10 13:47   Prepared: 07/01/10 11:18   Analyzed: 07/12/10 23:01

Solids: Preparation: EPA 3510/600 Series   Initial/Final: 1050 ml / 5 ml

Batch: 10G0020   Sequence: T002162   Calibration: P10J009   Instrument: GC4 Dual R

CAS NO.	COMPOUND	DILUTION	CONC. (ug/l)	Q
12674-11-2	Aroclor 1016	4	1.90	DU
11104-28-2	Aroclor 1221	4	3.81	DU
11141-16-5	Aroclor 1232	4	1.90	DU
53469-21-9	Aroclor 1242	4	11.3	D
12672-29-6	Aroclor 1248	4	1.90	DU
11097-69-1	Aroclor 1254	4	5.00	D
11096-82-5	Aroclor 1260	4	1.90	DU

SYSTEM MONITORING COMPOUND	ADDED (ng/ml)	CONC (ng/ml)	% REC	QC LIMITS	Q
Decachlorobiphenyl	100	0.00		12 - 130	*

* Values outside of QC limits

GC Semivolatile Organic Compounds

Quality Control Summaries

9405 SW Nimbus Avenue Beaverton, OR 97008 **tel** 503.906.9200 **fax** 503.906.9210 www.testamericainc.com

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Sequence: T002104

Instrument: GC4 Dual F

Matrix: Soil

Calibration: P10G042

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (T002104-CCV3)			Lab File ID: 07061030.D		Analyzed: 07/06/10 19:18			
Decachlorobiphenyl	100	101	85 - 115	13.19	13.185	0.0050	+/-1.0	
Calibration Check (T002104-CCV4)			Lab File ID: 07061043.D		Analyzed: 07/07/10 01:53			
Decachlorobiphenyl	100	106	85 - 115	13.16	13.185	-0.0250	+/-1.0	

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002104	Instrument:	GC4 Dual F
Matrix:	Soil	Calibration:	P10G042

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (10G0118-BLK1)			Lab File ID: 07061041.D		Analyzed: 07/07/10 01:08			
Decachlorobiphenyl	3.31	82.9	16 - 149	13.15	13.185	-0.0350	+/-1.0	
LCS (10G0118-BS1)			Lab File ID: 07061042.D		Analyzed: 07/07/10 01:31			
Decachlorobiphenyl	3.33	122	16 - 149	13.15	13.185	-0.0350	+/-1.0	
CS-5 (PTF0829-21)			Lab File ID: 07061033.D		Analyzed: 07/06/10 22:11			
Decachlorobiphenyl	3.32	107	16 - 149	13.16	13.185	-0.0250	+/-1.0	
CS-7 (PTF0829-23)			Lab File ID: 07061035.D		Analyzed: 07/06/10 22:56			
Decachlorobiphenyl	3.32	84.4	16 - 149	13.16	13.185	-0.0250	+/-1.0	
CS-8 (PTF0829-24)			Lab File ID: 07061036.D		Analyzed: 07/06/10 23:18			
Decachlorobiphenyl	3.33	78.0	16 - 149	13.16	13.185	-0.0250	+/-1.0	
CS-9 (PTF0829-25)			Lab File ID: 07061037.D		Analyzed: 07/06/10 23:40			
Decachlorobiphenyl	3.29	135	16 - 149	13.16	13.185	-0.0250	+/-1.0	
CS-10 (PTF0829-26)			Lab File ID: 07061038.D		Analyzed: 07/07/10 00:02			
Decachlorobiphenyl	3.28	160	16 - 149	13.16	13.185	-0.0250	+/-1.0	*
CS-11 (PTF0829-27)			Lab File ID: 07061039.D		Analyzed: 07/07/10 00:24			
Decachlorobiphenyl	3.32	94.7	16 - 149	13.16	13.185	-0.0250	+/-1.0	
CS-12 (PTF0829-28)			Lab File ID: 07061040.D		Analyzed: 07/07/10 00:46			
Decachlorobiphenyl	3.31	102	16 - 149	13.16	13.185	-0.0250	+/-1.0	

Form 2
SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002132	Instrument:	GC4 Dual F
Matrix:	Soil	Calibration:	P10G042

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (T002132-CCV1)			Lab File ID: 07081010.D			Analyzed: 07/08/10 13:50		
Decachlorobiphenyl	100	98.3	85 - 115	13.16	13.185	-0.0250	+/-1.0	
Calibration Check (T002132-CCV3)			Lab File ID: 07081025.D			Analyzed: 07/08/10 19:07		
Decachlorobiphenyl	100	96.9	85 - 115	13.14	13.185	-0.0450	+/-1.0	

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Sequence: T002132 Instrument: GC4 Dual F

Matrix: Soil Calibration: P10G042

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
AS-2 (PTF0829-02)			Lab File ID: 07081014.D		Analyzed: 07/08/10 15:37			
Decachlorobiphenyl	6.62	96.8	16 - 149	13.16	13.185	-0.0250	+/-1.0	
AS-4 (PTF0829-04)			Lab File ID: 07081016.D		Analyzed: 07/08/10 16:00			
Decachlorobiphenyl	6.65	150	16 - 149	13.16	13.185	-0.0250	+/-1.0	*
AS-6 (PTF0829-06)			Lab File ID: 07081018.D		Analyzed: 07/08/10 16:23			
Decachlorobiphenyl	6.65	102	16 - 149	13.16	13.185	-0.0250	+/-1.0	
AS-8 (PTF0829-08)			Lab File ID: 07081020.D		Analyzed: 07/08/10 16:46			
Decachlorobiphenyl	6.51	153	16 - 149	13.16	13.185	-0.0250	+/-1.0	*

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002112	Instrument:	GC4 Dual R
Matrix:	Soil	Calibration:	P10G039

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (T002112-CCV1)			Lab File ID: 07071011.D			Analyzed: 07/07/10 09:21		
Decachlorobiphenyl	100	97.9	85 - 115	13.56	13.58	-0.0200	+/-1.0	
Calibration Check (T002112-CCV2)			Lab File ID: 07071020.D			Analyzed: 07/07/10 12:29		
Decachlorobiphenyl	100	89.7	85 - 115	13.56	13.58	-0.0200	+/-1.0	
Calibration Check (T002112-CCV3)			Lab File ID: 07071030.D			Analyzed: 07/07/10 16:21		
Decachlorobiphenyl	100	89.5	85 - 115	13.56	13.58	-0.0200	+/-1.0	
Calibration Check (T002112-CCV4)			Lab File ID: 07071038.D			Analyzed: 07/07/10 19:54		
Decachlorobiphenyl	100	80.5	85 - 115	13.56	13.58	-0.0200	+/-1.0	*

Form 2
SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA 8082

Laboratory: TestAmerica Portland | SDG: PTF0829
Client: GeoPro Geologic Services | Project: Calbag PCB Surface Washing Pilot Study
Sequence: T002112 | Instrument: GC4 Dual R
Matrix: Soil | Calibration: P10G039

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (10F0915-BLK1)			Lab File ID: 07071018.D		Analyzed: 07/07/10 11:44			
Decachlorobiphenyl	3.33	59.7	16 - 149	13.56	13.58	-0.0200	+/-1.0	
LCS (10F0915-BS1)			Lab File ID: 07071019.D		Analyzed: 07/07/10 12:06			
Decachlorobiphenyl	3.33	76.6	16 - 149	13.56	13.58	-0.0200	+/-1.0	
Matrix Spike (10F0915-MS1)			Lab File ID: 07071035.D		Analyzed: 07/07/10 18:36			
Decachlorobiphenyl	6.47	89.0	16 - 149	13.59	13.58	0.0100	+/-1.0	
Matrix Spike Dup (10F0915-MSD1)			Lab File ID: 07071036.D		Analyzed: 07/07/10 19:02			
Decachlorobiphenyl	6.63	88.4	16 - 149	13.61	13.58	0.0300	+/-1.0	
AS-7 (PTF0829-07)			Lab File ID: 07071021.D		Analyzed: 07/07/10 12:52			
Decachlorobiphenyl	6.66	95.3	16 - 149	13.58	13.58	0.0000	+/-1.0	
AS-9 (PTF0829-09)			Lab File ID: 07071022.D		Analyzed: 07/07/10 13:15			
Decachlorobiphenyl	6.60	86.3	16 - 149	13.58	13.58	0.0000	+/-1.0	
AS-10 (PTF0829-10)			Lab File ID: 07071023.D		Analyzed: 07/07/10 13:41			
Decachlorobiphenyl	6.64	74.3	16 - 149	13.59	13.58	0.0100	+/-1.0	
AS-13 (PTF0829-13)			Lab File ID: 07071024.D		Analyzed: 07/07/10 14:08			
Decachlorobiphenyl	6.55	79.6	16 - 149	13.58	13.58	0.0000	+/-1.0	
AS-14 (PTF0829-14)			Lab File ID: 07071025.D		Analyzed: 07/07/10 14:34			
Decachlorobiphenyl	6.51	80.0	16 - 149	13.58	13.58	0.0000	+/-1.0	
CS-1 (PTF0829-17)			Lab File ID: 07071026.D		Analyzed: 07/07/10 15:00			
Decachlorobiphenyl	3.32	40.2	16 - 149	13.57	13.58	-0.0100	+/-1.0	
CS-3 (PTF0829-19)			Lab File ID: 07071027.D		Analyzed: 07/07/10 15:27			
Decachlorobiphenyl	3.32	71.1	16 - 149	13.57	13.58	-0.0100	+/-1.0	
CS-4 (PTF0829-20)			Lab File ID: 07071029.D		Analyzed: 07/07/10 15:54			
Decachlorobiphenyl	3.33	59.9	16 - 149	13.56	13.58	-0.0200	+/-1.0	
CS-6 (PTF0829-22)			Lab File ID: 07071015.D		Analyzed: 07/07/10 10:37			
Decachlorobiphenyl	3.32	62.7	16 - 149	13.57	13.58	-0.0100	+/-1.0	
CS-13 (PTF0829-29)			Lab File ID: 07071016.D		Analyzed: 07/07/10 10:59			
Decachlorobiphenyl	3.32	145	16 - 149	13.58	13.58	0.0000	+/-1.0	
CS-14 (PTF0829-30)			Lab File ID: 07071017.D		Analyzed: 07/07/10 11:21			
Decachlorobiphenyl	3.33	78.6	16 - 149	13.57	13.58	-0.0100	+/-1.0	
CS-15 (PTF0829-31)			Lab File ID: 07071013.D		Analyzed: 07/07/10 09:52			
Decachlorobiphenyl	3.28	65.7	16 - 149	13.57	13.58	-0.0100	+/-1.0	

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Sequence: T002112

Instrument: GC4 Dual R

Matrix: Soil

Calibration: P10G039

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
CS-16 (PTF0829-32)			Lab File ID: 07071014.D		Analyzed: 07/07/10 10:14			
Decachlorobiphenyl	3.28	64.5	16 - 149	13.57	13.58	-0.0100	+/-1.0	

Form 2
SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002133	Instrument:	GC4 Dual R
Matrix:	Soil	Calibration:	P10G039

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (T002133-CCV1)			Lab File ID: 07081011.D		Analyzed: 07/08/10 14:13			
Decachlorobiphenyl	100	86.1	85 - 115	13.56	13.58	-0.0200	+/-1.0	
Calibration Check (T002133-CCV3)			Lab File ID: 07081024.D		Analyzed: 07/08/10 19:07			
Decachlorobiphenyl	100	87.5	85 - 115	13.55	13.58	-0.0300	+/-1.0	
Calibration Check (T002133-CCV4)			Lab File ID: 07081036.D		Analyzed: 07/08/10 21:36			
Decachlorobiphenyl	100	70.7	85 - 115	13.56	13.58	-0.0200	+/-1.0	*

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002133	Instrument:	GC4 Dual R
Matrix:	Soil	Calibration:	P10G039

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Matrix Spike (10F0915-MS2)			Lab File ID: 07081026.D		Analyzed: 07/08/10 19:42			
Decachlorobiphenyl	6.47	74.9	16 - 149	13.58	13.58	0.0000	+/-1.0	
Matrix Spike Dup (10F0915-MSD2)			Lab File ID: 07081028.D		Analyzed: 07/08/10 20:05			
Decachlorobiphenyl	6.63	93.8	16 - 149	13.58	13.58	0.0000	+/-1.0	
AS-1 (PTF0829-01)			Lab File ID: 07081013.D		Analyzed: 07/08/10 15:37			
Decachlorobiphenyl	6.63	68.3	16 - 149	13.6	13.58	0.0200	+/-1.0	
AS-3 (PTF0829-03)			Lab File ID: 07081015.D		Analyzed: 07/08/10 16:00			
Decachlorobiphenyl	6.54	70.7	16 - 149	13.58	13.58	0.0000	+/-1.0	
AS-5 (PTF0829-05)			Lab File ID: 07081017.D		Analyzed: 07/08/10 16:23			
Decachlorobiphenyl	6.54	79.0	16 - 149	13.58	13.58	0.0000	+/-1.0	
CS-2 (PTF0829-18)			Lab File ID: 07081019.D		Analyzed: 07/08/10 16:46			
Decachlorobiphenyl	3.32	60.3	16 - 149	13.56	13.58	-0.0200	+/-1.0	

Form 2
SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Sequence: T002147

Instrument: GC4 Dual R

Matrix: Soil

Calibration: P10G039

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (T002147-CCV2)			Lab File ID: 07091017.D		Analyzed: 07/09/10 16:31			
Decachlorobiphenyl	100	98.6	85 - 115	13.56	13.58	-0.0200	+/-1.0	
Calibration Check (T002147-CCV4)			Lab File ID: 07091023.D		Analyzed: 07/09/10 19:18			
Decachlorobiphenyl	100	91.3	85 - 115	13.56	13.58	-0.0200	+/-1.0	

Form 2
SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002147	Instrument:	GC4 Dual R
Matrix:	Soil	Calibration:	P10G039

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
AS-11 (PTF0829-11)			Lab File ID: 07091018.D		Analyzed: 07/09/10 16:54			
Decachlorobiphenyl	6.64	71.2	16 - 149	13.59	13.58	0.0100	+/-1.0	
AS-12 (PTF0829-12)			Lab File ID: 07091019.D		Analyzed: 07/09/10 17:17			
Decachlorobiphenyl	6.65	69.0	16 - 149	13.58	13.58	0.0000	+/-1.0	

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002147	Instrument:	GC4 Dual R
Matrix:	Water	Calibration:	P10G039

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (10G0020-BLK1)			Lab File ID: 07091020.D			Analyzed: 07/09/10 17:39		
Decachlorobiphenyl	100	39.0	12 - 130	13.56	13.58	-0.0200	+/-1.0	
LCS (10G0020-BS2)			Lab File ID: 07091021.D			Analyzed: 07/09/10 18:01		
Decachlorobiphenyl	100	48.7	12 - 130	13.56	13.58	-0.0200	+/-1.0	

Form 2
SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002162	Instrument:	GC4 Dual R
Matrix:	Water	Calibration:	P10J009

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
W-1 (PTF0829-33)			Lab File ID: 07121033.D		Analyzed: 07/12/10 23:01			
Decachlorobiphenyl	100		12 - 130	13.58	13.57	0.0100	+/-1.0	*
Calibration Check (T002162-CCV1)			Lab File ID: 07121031.D		Analyzed: 07/12/10 22:39			
Decachlorobiphenyl	100	102	85 - 115	13.57	13.57	0.0000	+/-1.0	
Calibration Check (T002162-CCV2)			Lab File ID: 07121036.D		Analyzed: 07/13/10 00:07			
Decachlorobiphenyl	100	88.4	85 - 115	13.57	13.57	0.0000	+/-1.0	

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Sequence: T002178

Instrument: GC4 Dual R

Matrix: Soil

Calibration: P10J009

Surrogate Compound	Spike Level ng/ml	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (T002178-CCV1)			Lab File ID: 07131011.D			Analyzed: 07/13/10 13:35		
Decachlorobiphenyl	100	101	85 - 115	13.57	13.57	0.0000	+/-1.0	
Calibration Check (T002178-CCV2)			Lab File ID: 07131026.D			Analyzed: 07/13/10 17:45		
Decachlorobiphenyl	100	86.0	85 - 115	13.57	13.57	0.0000	+/-1.0	

Form 2

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002178	Instrument:	GC4 Dual R
Matrix:	Soil	Calibration:	P10J009

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
AS-15 (PTF0829-15)			Lab File ID: 07131013.D			Analyzed: 07/13/10 14:01		
Decachlorobiphenyl	6.65	79.0	16 - 149	13.61	13.57	0.0400	+/-1.0	
AS-16 (PTF0829-16)			Lab File ID: 07131015.D			Analyzed: 07/13/10 14:24		
Decachlorobiphenyl	6.58	65.2	16 - 149	13.62	13.57	0.0500	+/-1.0	

Form 1

METHOD BLANK DATA SHEET

EPA 8082

Laboratory:	TestAmerica Portland			SDG:	PTF0829
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Soil	Laboratory ID:	10F0915-BLK1	File ID:	07071018.D
Prepared:	06/29/10 12:00	Preparation:	EPA 3550	Initial/Final:	60 g / 2 ml
Analyzed:	07/07/10 11:44	Instrument:	GC4 Dual R		
Batch:	10F0915	Sequence:	T002112	Calibration:	P10G039

CAS NO.	COMPOUND	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	3.33	U
11104-28-2	Aroclor 1221	6.70	U
11141-16-5	Aroclor 1232	3.33	U
53469-21-9	Aroclor 1242	3.33	U
12672-29-6	Aroclor 1248	3.33	U
11097-69-1	Aroclor 1254	3.33	U
11096-82-5	Aroclor 1260	3.33	U
37324-23-5	Aroclor 1262	3.33	U
11100-14-4	Aroclor 1268	3.33	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.33	1.99	59.7	16 - 149	

Laboratory Blanks Report
EPA 8082

SDG: PTF0829

Batch: **10F0915** **Matrix:** **Soil**

Blank: 10F0915-BLK1

Associated Samples

Laboratory ID:	Sample:	Analyzed:	Instrument:	File ID:
10F0915-BLK1	Blank	7/7/2010 11:44:00 AM	GC4-DUAL	07071018.D
10F0915-BS1	LCS	7/7/2010 12:06:00 PM	GC4-DUAL	07071019.D
PTF0829-07	AS-7	7/7/2010 12:52:00 PM	GC4-DUAL	07071021.D
PTF0829-09	AS-9	7/7/2010 1:15:00 PM	GC4-DUAL	07071022.D
PTF0829-10	AS-10	7/7/2010 1:41:00 PM	GC4-DUAL	07071023.D
PTF0829-13	AS-13	7/7/2010 2:08:00 PM	GC4-DUAL	07071024.D
PTF0829-14	AS-14	7/7/2010 2:34:00 PM	GC4-DUAL	07071025.D
PTF0829-17	CS-1	7/7/2010 3:00:00 PM	GC4-DUAL	07071026.D
PTF0829-19	CS-3	7/7/2010 3:27:00 PM	GC4-DUAL	07071027.D
PTF0829-20	CS-4	7/7/2010 3:54:00 PM	GC4-DUAL	07071029.D
10F0915-MS1	Matrix Spike	7/7/2010 6:36:00 PM	GC4 Dual R	07071035.D
10F0915-MSD1	Matrix Spike Dup	7/7/2010 7:02:00 PM	GC4 Dual R	07071036.D
PTF0829-01	AS-1	7/8/2010 3:37:00 PM	GC4-DUAL	07081013.D
PTF0829-02	AS-2	7/8/2010 3:37:00 PM	GC4-DUAL	07081014.D
PTF0829-03	AS-3	7/8/2010 4:00:00 PM	GC4-DUAL	07081015.D
PTF0829-04	AS-4	7/8/2010 4:00:00 PM	GC4-DUAL	07081016.D
PTF0829-05	AS-5	7/8/2010 4:23:00 PM	GC4-DUAL	07081017.D
PTF0829-06	AS-6	7/8/2010 4:23:00 PM	GC4-DUAL	07081018.D
PTF0829-08	AS-8	7/8/2010 4:46:00 PM	GC4-DUAL	07081020.D
PTF0829-18	CS-2	7/8/2010 4:46:00 PM	GC4-DUAL	07081019.D
10F0915-MS2	Matrix Spike	7/8/2010 7:42:00 PM	GC4 Dual R	07081026.D
10F0915-MSD2	Matrix Spike Dup	7/8/2010 8:05:00 PM	GC4 Dual R	07081028.D
PTF0829-11	AS-11	7/9/2010 4:54:00 PM	GC4-DUAL	07091018.D
PTF0829-12	AS-12	7/9/2010 5:17:00 PM	GC4-DUAL	07091019.D
PTF0829-15	AS-15	7/13/2010 2:01:00 PM	GC4-DUAL	07131013.D
PTF0829-16	AS-16	7/13/2010 2:24:00 PM	GC4-DUAL	07131015.D

Form 1

METHOD BLANK DATA SHEET

EPA 8082

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Water Laboratory ID: 10G0020-BLK1 File ID: 07091020.D

Prepared: 07/01/10 11:18 Preparation: EPA 3510/600 Series Initial/Final: 1000 ml / 5 ml

Analyzed: 07/09/10 17:39 Instrument: GC4 Dual R

Batch: 10G0020 Sequence: T002147 Calibration: P10G039

CAS NO.	COMPOUND	CONC. (ug/l)	Q
12674-11-2	Aroclor 1016	0.500	U
11104-28-2	Aroclor 1221	1.00	U
11141-16-5	Aroclor 1232	0.500	U
53469-21-9	Aroclor 1242	0.500	U
12672-29-6	Aroclor 1248	0.500	U
11097-69-1	Aroclor 1254	0.500	U
11096-82-5	Aroclor 1260	0.500	U

SYSTEM MONITORING COMPOUND	ADDED (ng/ml)	CONC (ng/ml)	% REC	QC LIMITS	Q
Decachlorobiphenyl	100	39.0	39.0	12 - 130	

Form 1

METHOD BLANK DATA SHEET

EPA 8082

Laboratory:	TestAmerica Portland			SDG:	PTF0829
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Soil	Laboratory ID:	10G0118-BLK1	File ID:	07061041.D
Prepared:	07/06/10 11:30	Preparation:	EPA 3550	Initial/Final:	60.41 g / 2 ml
Analyzed:	07/07/10 01:08	Instrument:	GC4 Dual F		
Batch:	10G0118	Sequence:	T002104	Calibration:	P10G042

CAS NO.	COMPOUND	CONC. (ug/kg wet)	Q
12674-11-2	Aroclor 1016	3.31	U
11104-28-2	Aroclor 1221	6.65	U
11141-16-5	Aroclor 1232	3.31	U
53469-21-9	Aroclor 1242	3.31	U
12672-29-6	Aroclor 1248	3.31	U
11097-69-1	Aroclor 1254	3.31	U
11096-82-5	Aroclor 1260	3.31	U
37324-23-5	Aroclor 1262	3.31	U
11100-14-4	Aroclor 1268	3.31	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	3.31	2.74	82.9	16 - 149	

Laboratory Blanks Report
EPA 8082

SDG: PTF0829

Batch: **10G0020** **Matrix:** **Water**

Blank: 10G0020-BLK1

Associated Samples

Laboratory ID:	Sample:	Analyzed:	Instrument:	File ID:
10G0020-BLK1	Blank	7/9/2010 5:39:00 PM	GC4-DUAL	07091020.D
10G0020-BS2	LCS	7/9/2010 6:01:00 PM	GC4-DUAL	07091021.D
PTF0829-33	W-1	7/12/2010 11:01:00 PM	GC4-DUAL	07121033.D

Batch: **10G0118** **Matrix:** **Soil**

Blank: 10G0118-BLK1

Associated Samples

Laboratory ID:	Sample:	Analyzed:	Instrument:	File ID:
PTF0829-21	CS-5	7/6/2010 10:11:00 PM	GC4-DUAL	07061033.D
PTF0829-23	CS-7	7/6/2010 10:56:00 PM	GC4-DUAL	07061035.D
PTF0829-24	CS-8	7/6/2010 11:18:00 PM	GC4-DUAL	07061036.D
PTF0829-25	CS-9	7/6/2010 11:40:00 PM	GC4-DUAL	07061037.D
PTF0829-26	CS-10	7/7/2010 12:02:00 AM	GC4-DUAL	07061038.D
PTF0829-27	CS-11	7/7/2010 12:24:00 AM	GC4-DUAL	07061039.D
PTF0829-28	CS-12	7/7/2010 12:46:00 AM	GC4-DUAL	07061040.D
10G0118-BLK1	Blank	7/7/2010 1:08:00 AM	GC4-DUAL	07061041.D
10G0118-BS1	LCS	7/7/2010 1:31:00 AM	GC4-DUAL	07061042.D
PTF0829-31	CS-15	7/7/2010 9:52:00 AM	GC4-DUAL	07071013.D
PTF0829-32	CS-16	7/7/2010 10:14:00 AM	GC4-DUAL	07071014.D
PTF0829-22	CS-6	7/7/2010 10:37:00 AM	GC4-DUAL	07071015.D
PTF0829-29	CS-13	7/7/2010 10:59:00 AM	GC4-DUAL	07071016.D
PTF0829-30	CS-14	7/7/2010 11:21:00 AM	GC4-DUAL	07071017.D

Form 3

LCS / LCS DUPLICATE RECOVERY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Soil	Spike standard:	PT01300
Batch:	10F0915	Laboratory ID:	10F0915-BS1
Preparation:	EPA 3550	Initial/Final:	60 g / 2 ml

COMPOUND	SPIKE ADDED (ug/kg wet)	LCS CONCENTRATION (ug/kg wet)	LCS % REC. #	QC LIMITS REC.
Aroclor 1016	33.3	24.9	74.7	57 - 135
Aroclor 1260	33.3	23.6	70.7	60 - 135

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Form 3

LCS / LCS DUPLICATE RECOVERY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Water	Spike standard:	PT01300
Batch:	10G0020	Laboratory ID:	10G0020-BS2
Preparation:	EPA 3510/600 Series	Initial/Final:	1000 ml / 5 ml

COMPOUND	SPIKE ADDED (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC. #	QC LIMITS REC.
Aroclor 1016	5.00	3.99	79.8	50 - 114
Aroclor 1260	5.00	3.15	62.9	8 - 127

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Form 3

LCS / LCS DUPLICATE RECOVERY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Soil	Spike standard:	PT01300
Batch:	10G0118	Laboratory ID:	10G0118-BS1
Preparation:	EPA 3550	Initial/Final:	60.13 g / 2 ml

COMPOUND	SPIKE ADDED (ug/kg wet)	LCS CONCENTRATION (ug/kg wet)	LCS % REC. #	QC LIMITS REC.
Aroclor 1016	33.3	37.7	113	57 - 135
Aroclor 1260	33.3	40.4	121	60 - 135

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Form 3

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA 8082

AS-1

Laboratory: TestAmerica Portland | SDG: PTF0829
Client: GeoPro Geologic Services | Project: Calbag PCB Surface Washing Pilot Study
Matrix: Soil | Spike standard: PT01300
Batch: 10F0915 | Laboratory ID: 10F0915-MS1
Preparation: EPA 3550 | Initial/Final: 30.92 g / 4 ml

Source Sample Name: AS-1

COMPOUND	SPIKE ADDED (ug/kg wet)	SAMPLE CONCENTRATION (ug/kg wet)	MS CONCENTRATION (ug/kg wet)	MS % REC. #	QC LIMITS REC.
Aroclor 1016	64.7	ND	ND	*	37 - 145
Aroclor 1260	64.7	ND	118	183 *	25 - 144

COMPOUND	SPIKE ADDED (ug/kg wet)	MSD CONCENTRATION (ug/kg wet)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Aroclor 1016	66.3	ND	*		26	37 - 145
Aroclor 1260	66.3	189	284 *	45.7 *	30	25 - 144

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Form 3

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA 8082

AS-1

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Matrix: Soil

Spike standard: PT01300

Batch: 10F0915

Laboratory ID: 10F0915-MS2

Preparation: EPA 3550

Initial/Final: 30.92 g / 4 ml

Source Sample Name: AS-1

COMPOUND	SPIKE ADDED (ug/kg wet)	SAMPLE CONCENTRATION (ug/kg wet)	MS CONCENTRATION (ug/kg wet)	MS % REC. #	QC LIMITS REC.
Aroclor 1016	64.7	ND	285	440 *	37 - 145
Aroclor 1260	64.7	ND	110	170 *	25 - 144

COMPOUND	SPIKE ADDED (ug/kg wet)	MSD CONCENTRATION (ug/kg wet)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Aroclor 1016	66.3	615	927 *	73.4 *	26	37 - 145
Aroclor 1260	66.3	187	282 *	51.8 *	30	25 - 144

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

METHOD DETECTION AND REPORTING LIMITS

EPA 8082

Laboratory: TestAmerica Portland **SDG:** PTF0829

Client: GeoPro Geologic Services **Project:** Calbag PCB Surface Washing Pilot Stu

Matrix: Soil **Instrument:** GC4 Dual F

Analyte	MDL	MRL	Units
Aroclor 1016	1.67	3.33	ug/kg
Aroclor 1221	3.33	6.70	ug/kg
Aroclor 1232	1.67	3.33	ug/kg
Aroclor 1242	1.67	3.33	ug/kg
Aroclor 1248	1.67	3.33	ug/kg
Aroclor 1254	1.67	3.33	ug/kg
Aroclor 1260	1.67	3.33	ug/kg
Aroclor 1262	1.67	3.33	ug/kg
Aroclor 1268	1.67	3.33	ug/kg
Decachlorobiphenyl			ug/kg

METHOD DETECTION AND REPORTING LIMITS
EPA 8082

Laboratory: TestAmerica Portland **SDG:** PTF0829

Client: GeoPro Geologic Services **Project:** Calbag PCB Surface Washing Pilot Stu

Matrix: Soil **Instrument:** GC4 Dual R

Analyte	MDL	MRL	Units
Aroclor 1016	1.67	3.33	ug/kg
Aroclor 1221	3.33	6.70	ug/kg
Aroclor 1232	1.67	3.33	ug/kg
Aroclor 1242	1.67	3.33	ug/kg
Aroclor 1248	1.67	3.33	ug/kg
Aroclor 1254	1.67	3.33	ug/kg
Aroclor 1260	1.67	3.33	ug/kg
Aroclor 1262	1.67	3.33	ug/kg
Aroclor 1268	1.67	3.33	ug/kg
Decachlorobiphenyl			ug/kg

METHOD DETECTION AND REPORTING LIMITS
EPA 8082

Laboratory: TestAmerica Portland **SDG:** PTF0829

Client: GeoPro Geologic Services **Project:** Calbag PCB Surface Washing Pilot Stu

Matrix: Water **Instrument:** GC4 Dual R

Analyte	MDL	MRL	Units
Aroclor 1016	0.250	0.500	ug/l
Aroclor 1221	0.500	1.00	ug/l
Aroclor 1232	0.250	0.500	ug/l
Aroclor 1242	0.250	0.500	ug/l
Aroclor 1248	0.250	0.500	ug/l
Aroclor 1254	0.250	0.500	ug/l
Aroclor 1260	0.250	0.500	ug/l
Decachlorobiphenyl			ug/l

Form 6

INITIAL CALIBRATION DATA

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10G042

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual F

Calibration Date: 07/20/10 18:33

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF
Aroclor 1016	50	125.02	100	61.8	200	54.82	400	54.775	800	50.42375	1000	49.419
Aroclor 1260	50	126.38	100	94.44	200	80.535	400	74.6375	800	70.2975	1000	68.695
Decachlorobiphenyl	5	301.6	10	281.2	20	256.3	40	230.225	80	215.525	100	209.68

Form 6

INITIAL CALIBRATION DATA (Continued)

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10G042

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual F

Calibration Date: 07/20/10 18:33

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF
Aroclor 1016	1200	48.24	1600	47.27875								
Aroclor 1260	1200	67.40166	1600	66.1075								
Decachlorobiphenyl	120	205.9167	160	199.9375								

Form 6

INITIAL CALIBRATION DATA (Continued)

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10G042

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual F

Calibration Date: 07/20/10 18:33

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aroclor 1016	61.47206	42.47148	0	0		0.9990413		
Aroclor 1260	81.06177	25.33897	0	0		0.9999642		
Decachlorobiphenyl	237.548	15.98263	13.185	0.1060861		0.9998846		

Form 6
INITIAL CALIBRATION DATA
EPA 8082

Laboratory: TestAmerica Portland | SDG: PTF0829
Client: GeoPro Geologic Services | Project: Calbag PCB Surface Washing Pilot Study
Calibration: P10G039 | Instrument: GC4 Dual R
Calibration Date: 07/20/10 17:45

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF
Aroclor 1016	50	359.2	100	334.31	200	320.465	400	294.8325	800	271.3625	1000	261.715
Aroclor 1260	50	755.92	100	717.06	200	691.45	400	637.0625	800	585.0425	1000	564.874
Decachlorobiphenyl	5	2846	10	2560.3	20	2409.3	40	2159.875	80	1968.938	100	1921.55

Form 6

INITIAL CALIBRATION DATA (Continued)

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10G039

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual R

Calibration Date: 07/20/10 17:45

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF
Aroclor 1016	1200	254.7933	1600	248.3106								
Aroclor 1260	1200	554.7	1600	539.4706								
Decachlorobiphenyl	120	1874.508	160	1815.762								

Form 6

INITIAL CALIBRATION DATA (Continued)

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10G039

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual R

Calibration Date: 07/20/10 17:45

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aroclor 1016	293.1236	13.97737	0	0		0.9996804		
Aroclor 1260	630.6975	13.04527	0	0		0.9996988		
Decachlorobiphenyl	2194.529	17.02222	13.58	7.185427E-03		0.9997819		

Form 6

INITIAL CALIBRATION DATA

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10J009

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual R

Calibration Date: 10/05/10 21:05

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF
Aroclor 1016	50	324.94	100	313.31	200	299.99	400	270.29	800	247.3188	1000	244.604
Aroclor 1260	50	710.84	100	680.28	200	639.745	400	574.345	800	522.755	1000	522.238
Decachlorobiphenyl	5	2535.2	10	2505.3	20	2288.05	40	1997.175	80	1812.113	100	1800.34

Form 6

INITIAL CALIBRATION DATA (Continued)

EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Calibration: P10J009
Instrument: GC4 Dual R
Calibration Date: 10/05/10 21:05

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF	ng/ml	RF
Aroclor 1016	1200	233.665	1600	232.3106								
Aroclor 1260	1200	496.3483	1600	501.065								
Decachlorobiphenyl	120	1727.442	160	1750.075								

Form 6

INITIAL CALIBRATION DATA (Continued)

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Calibration: P10J009

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual R

Calibration Date: 10/05/10 21:05

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aroclor 1016	270.8035	13.73811	0	0		0.9993668		
Aroclor 1260	580.952	14.63638	0	0		0.9990922		
Decachlorobiphenyl	2051.962	16.62944	13.57	1.887996E-02		0.9990445		

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Stu
Calibration: P10G042
Laboratory ID: T002039-SCV1
Sequence: T002039
Standard ID: PT00397

ANALYTE	EXPECTED (ng/ml)	FOUND (ng/ml)	% DRIFT	QC LIMIT
Aroclor 1016	1000	1.02	-99.9 *	30.00
Aroclor 1260	1000	1.02	-99.9 *	30.00

* Values outside of QC limits

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Stu

Calibration: P10G039

Laboratory ID: T001998-SCV1

Sequence: T001998

Standard ID: PT00397

ANALYTE	EXPECTED (ng/ml)	FOUND (ng/ml)	% DRIFT	QC LIMIT
Aroclor 1016	1000	1010	1.1	30.00
Aroclor 1260	1000	993	-0.7	30.00

* Values outside of QC limits

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Stu
Calibration: P10J009
Laboratory ID: T002162-SCV1
Sequence: T002162
Standard ID: PT00397

ANALYTE	EXPECTED (ng/ml)	FOUND (ng/ml)	% DRIFT	QC LIMIT
Aroclor 1016	1000	1010	0.6	30.00
Aroclor 1260	1000	998	-0.2	30.00

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Instrument ID: GC4 Dual F

Lab File ID: 07061030.D

Sequence: T002104

Lab Sample ID: T002104-CCV3

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Calibration: P10G042

Calibration Date: 07/20/10 18:33

Injection Date: 07/06/10

Injection Time: 19:18

COMPOUND	TYPE	CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1030	61.47206	50.817		3.1	15
Aroclor 1260	Q	1000	1010	81.06177	69.206		0.8	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Instrument ID: GC4 Dual F

Calibration: P10G042

Lab File ID: 07061043.D

Calibration Date: 07/20/10 18:33

Sequence: T002104

Injection Date: 07/07/10

Lab Sample ID: T002104-CCV4

Injection Time: 01:53

COMPOUND	TYPE	CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1090	61.47206	53.295		8.6	15
Aroclor 1260	Q	1000	1080	81.06177	73.546		7.7	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual F	Calibration:	P10G042
Lab File ID:	07081010.D	Calibration Date:	07/20/10 18:33
Sequence:	T002132	Injection Date:	07/08/10
Lab Sample ID:	T002132-CCV1	Injection Time:	13:50

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	948	61.47206	47.054		-5.2	15
Aroclor 1260	Q	1000	963	81.06177	66.382		-3.7	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual F	Calibration:	P10G042
Lab File ID:	07081025.D	Calibration Date:	07/20/10 18:33
Sequence:	T002132	Injection Date:	07/08/10
Lab Sample ID:	T002132-CCV3	Injection Time:	19:07

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	963	61.47206	47.767		-3.7	15
Aroclor 1260	Q	1000	967	81.06177	66.602		-3.3	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07071011.D	Calibration Date:	07/20/10 17:45
Sequence:	T002112	Injection Date:	07/07/10
Lab Sample ID:	T002112-CCV1	Injection Time:	09:21

COMPOUND	TYPE	CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	955	293.1236	252.842		-4.5	15
Aroclor 1260	Q	1000	948	630.6975	543.427		-5.2	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7
CONTINUING CALIBRATION CHECK
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07071020.D	Calibration Date:	07/20/10 17:45
Sequence:	T002112	Injection Date:	07/07/10
Lab Sample ID:	T002112-CCV2	Injection Time:	12:29

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	962	293.1236	254.372		-3.8	15
Aroclor 1260	Q	1000	912	630.6975	524.787		-8.8	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07071030.D	Calibration Date:	07/20/10 17:45
Sequence:	T002112	Injection Date:	07/07/10
Lab Sample ID:	T002112-CCV3	Injection Time:	16:21

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1070	293.1236	278.789		6.6	15
Aroclor 1260	Q	1000	954	630.6975	546.389		-4.6	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07071038.D	Calibration Date:	07/20/10 17:45
Sequence:	T002112	Injection Date:	07/07/10
Lab Sample ID:	T002112-CCV4	Injection Time:	19:54

COMPOUND	TYPE	CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1090	293.1236	283.107		8.5	15
Aroclor 1260	Q	1000	866	630.6975	501.064		-13.4	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07081011.D	Calibration Date:	07/20/10 17:45
Sequence:	T002133	Injection Date:	07/08/10
Lab Sample ID:	T002133-CCV1	Injection Time:	14:13

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	986	293.1236	260.163		-1.4	15
Aroclor 1260	Q	1000	968	630.6975	553.684		-3.2	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07081024.D	Calibration Date:	07/20/10 17:45
Sequence:	T002133	Injection Date:	07/08/10
Lab Sample ID:	T002133-CCV3	Injection Time:	19:07

COMPOUND	TYPE	CONC. (ng/ml) STD	CONC. (ng/ml) CCV	RESPONSE FACTOR ICAL	RESPONSE FACTOR CCV	RESPONSE FACTOR MIN (#)	% DIFF / DRIFT CCV	% DIFF / DRIFT LIMIT (#)
Aroclor 1016	Q	1000	1020	293.1236	267.702		1.9	15
Aroclor 1260	Q	1000	957	630.6975	548.302		-4.3	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7
CONTINUING CALIBRATION CHECK
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07081036.D	Calibration Date:	07/20/10 17:45
Sequence:	T002133	Injection Date:	07/08/10
Lab Sample ID:	T002133-CCV4	Injection Time:	21:36

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	944	293.1236	250.133		-5.6	15
Aroclor 1260	Q	1000	732	630.6975	430.226		-26.8	15 *

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10G039
Lab File ID:	07091017.D	Calibration Date:	07/20/10 17:45
Sequence:	T002147	Injection Date:	07/09/10
Lab Sample ID:	T002147-CCV2	Injection Time:	16:31

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1060	293.1236	278.252		6.4	15
Aroclor 1260	Q	1000	1050	630.6975	595.163		4.9	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Instrument ID: GC4 Dual R

Calibration: P10G039

Lab File ID: 07091023.D

Calibration Date: 07/20/10 17:45

Sequence: T002147

Injection Date: 07/09/10

Lab Sample ID: T002147-CCV4

Injection Time: 19:18

COMPOUND	TYPE	CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1080	293.1236	280.863		7.5	15
Aroclor 1260	Q	1000	993	630.6975	566.493		-0.7	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10J009
Lab File ID:	07121031.D	Calibration Date:	10/05/10 21:05
Sequence:	T002162	Injection Date:	07/12/10
Lab Sample ID:	T002162-CCV1	Injection Time:	22:39

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1020	270.8035	247.341		2.1	15
Aroclor 1260	Q	1000	1020	580.952	524.883		1.8	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Instrument ID: GC4 Dual R

Calibration: P10J009

Lab File ID: 07121036.D

Calibration Date: 10/05/10 21:05

Sequence: T002162

Injection Date: 07/13/10

Lab Sample ID: T002162-CCV2

Injection Time: 00:07

COMPOUND	TYPE	CONC. (ng/ml) STD	CONC. (ng/ml) CCV	RESPONSE FACTOR ICAL	RESPONSE FACTOR CCV	RESPONSE FACTOR MIN (#)	% DIFF / DRIFT CCV	% DIFF / DRIFT LIMIT (#)
Aroclor 1016	Q	1000	1070	270.8035	257.968		6.9	15
Aroclor 1260	Q	1000	929	580.952	482.047		-7.1	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Instrument ID:	GC4 Dual R	Calibration:	P10J009
Lab File ID:	07131011.D	Calibration Date:	10/05/10 21:05
Sequence:	T002178	Injection Date:	07/13/10
Lab Sample ID:	T002178-CCV1	Injection Time:	13:35

		CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1010	270.8035	244.455		0.7	15
Aroclor 1260	Q	1000	991	580.952	512.031		-0.9	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Form 7

CONTINUING CALIBRATION CHECK

EPA 8082

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Instrument ID: GC4 Dual R

Calibration: P10J009

Lab File ID: 07131026.D

Calibration Date: 10/05/10 21:05

Sequence: T002178

Injection Date: 07/13/10

Lab Sample ID: T002178-CCV2

Injection Time: 17:45

COMPOUND	TYPE	CONC. (ng/ml)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Aroclor 1016	Q	1000	1060	270.8035	255.027		5.6	15
Aroclor 1260	Q	1000	938	580.952	486.272		-6.2	15

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

INITIAL CALIBRATION STANDARDS
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002039	Instrument:	GC4 Dual F
Calibration:	P10G042		

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
PT00689	AR 1660 Cal 50-5ppb	T002039-CAL1	06291018.D	06/29/10 18:06
PT00690	AR 1660 Cal 100-10ppb	T002039-CAL2	06291020.D	06/29/10 18:33
PT00691	AR 1660 Cal 200-20ppb	T002039-CAL3	06291022.D	06/29/10 18:59
PT00692	AR 1660 Cal 400-40ppb	T002039-CAL4	06291024.D	06/29/10 19:26
PT00693	AR 1660 Cal 800-80ppb	T002039-CAL5	06291026.D	06/29/10 19:53
PT00694	AR 1660 Cal 1000-100ppb	T002039-CAL6	06291028.D	06/29/10 20:20
PT00695	AR 1660 Cal 1200-120ppb	T002039-CAL7	06291030.D	06/29/10 20:47
PT00696	AR 1660 Cal 1600-160ppb	T002039-CAL8	06291032.D	06/29/10 21:14
PT00397	AR 1660 ICV (1ppm)	T002039-SCV1	06291034.D	06/29/10 21:41

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Sequence: T002039

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual F

Calibration: P10G042

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	T002039-CAL1	06291018.D	06/29/10 18:06
Cal Standard	T002039-CAL2	06291020.D	06/29/10 18:33
Cal Standard	T002039-CAL3	06291022.D	06/29/10 18:59
Cal Standard	T002039-CAL4	06291024.D	06/29/10 19:26
Cal Standard	T002039-CAL5	06291026.D	06/29/10 19:53
Cal Standard	T002039-CAL6	06291028.D	06/29/10 20:20
Cal Standard	T002039-CAL7	06291030.D	06/29/10 20:47
Cal Standard	T002039-CAL8	06291032.D	06/29/10 21:14
Secondary Cal Check	T002039-SCV1	06291034.D	06/29/10 21:41

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T002104	Instrument:	GC4 Dual F
		Calibration:	P10G042

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Aroclor Reference	T002104-ARC2	07061008.D	07/06/10 14:06
Aroclor Reference	T002104-ARC4	07061012.D	07/06/10 14:52
Calibration Check	T002104-CCV3	07061030.D	07/06/10 19:18
CS-5	PTF0829-21	07061033.D	07/06/10 22:11
CS-7	PTF0829-23	07061035.D	07/06/10 22:56
CS-8	PTF0829-24	07061036.D	07/06/10 23:18
CS-9	PTF0829-25	07061037.D	07/06/10 23:40
CS-10	PTF0829-26	07061038.D	07/07/10 00:02
CS-11	PTF0829-27	07061039.D	07/07/10 00:24
CS-12	PTF0829-28	07061040.D	07/07/10 00:46
Blank	10G0118-BLK1	07061041.D	07/07/10 01:08
LCS	10G0118-BS1	07061042.D	07/07/10 01:31
Calibration Check	T002104-CCV4	07061043.D	07/07/10 01:53

Directory: C:\HPCHEM\4\DATA\070610F1

Injection Log

4F

4F063010.m

*4FF3010m.m

Line	Vial	FileName	Multiplier	SampleName	Misc Info		Injected
1	1	07061002.d	1.	PRIMER			6 Jul 2010 12:57
2	2	07061004.d	1.	HEXANE#PT01346			6 Jul 2010 13:20
3	4	07061006.d	1.	T002104-ARC1 4868 1200ppb	1x	PT01855	6 Jul 2010 13:43
4	3	07061008.d	1.	T002104-ARC2 4262 1200ppb	1x	PT01646	6 Jul 2010 14:06
5	6	07061010.d	1.	T002104-CCV1 1660 1000-100ppb OK	1x	PT001959	6 Jul 2010 14:29
6	5	07061012.d	1.	T002104-ARC4 2154 1200ppb	1x	pt01968	6 Jul 2010 14:52
7	7	07061014.d	1.	T002104-icv 2154 ~~1200ppb~~ 1000ppb	1x	PT01244	6 Jul 2010 15:15
8	53	07061016.d	1.	ptf0777-02 10g0001	1x	PT00689	6 Jul 2010 15:50
9	54	07061018.d	1.	ptf0777-03 10g0001	1x	PT00690	6 Jul 2010 16:13
10	55	07061020.d	1.	ptf0777-04 10g0001	1x	PT00691	6 Jul 2010 16:36
11	56	07061022.d	1.	ptf0777-05 10g0001	1x		6 Jul 2010 17:23
12	57	07061024.d	1.	ptf0777-06 10g0001	1x	PT00693	6 Jul 2010 17:52
13	58	07061026.d	1.	T002104-CCV2 1660 1000-100ppb OK	1x	PT01959	6 Jul 2010 18:15
14	59	07061028.d	1.	ptf0777-01 10g0001	1x		6 Jul 2010 18:55
15	60	07061030.d	1.	T002104-CCV3 1660 1000-100ppb OK	1x	PT01959	6 Jul 2010 19:18
16	1	07061032.d	1.	hex NR wrong injection OK	1x		6 Jul 2010 19:41
17	61	07061033.d	1.	PTF0829-21 10g118	20x		6 Jul 2010 22:11
18	62	07061034.d	1.	PTF0829-22 NR 10g118	1x		6 Jul 2010 22:34
19	63	07061035.d	1.	PTF0829-23 10g118	20x		6 Jul 2010 22:56
20	64	07061036.d	1.	PTF0829-24 10g118	1x		6 Jul 2010 23:18
21	65	07061037.d	1.	PTF0829-25 10g118 *	20x		6 Jul 2010 23:40
22	66	07061038.d	1.	PTF0829-26 10g118	20x		7 Jul 2010 00:02
23	67	07061039.d	1.	PTF0829-27 10g118	1x		7 Jul 2010 00:24
24	68	07061040.d	1.	PTF0829-28 10g118	1x		7 Jul 2010 00:46
25	69	07061041.d	1.	10g0118-blk1	1x		7 Jul 2010 01:08
26	70	07061042.d	1.	10g0118-bs1	1x		7 Jul 2010 01:31
27	71	07061043.d	1.	T002105-CCV4 1660 1000-100ppb	1x	PT01959 OK	7 Jul 2010 01:53

vials witnessed LAW

DL w/ HEX PT00880

vial witness vial #61-71 LAW 7/7/10
vial witness #53-60

Rev. files (02-30) LAW 7/7/10

Rev'd files 32-43 7/9/10 LAW

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Sequence: T002132

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual F

Calibration: P10G042

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	T002132-CCV1	07081010.D	07/08/10 13:50
Aroclor Reference	T002132-ARC4	07081012.D	07/08/10 14:13
AS-2	PTF0829-02	07081014.D	07/08/10 15:37
AS-4	PTF0829-04	07081016.D	07/08/10 16:00
AS-6	PTF0829-06	07081018.D	07/08/10 16:23
AS-8	PTF0829-08	07081020.D	07/08/10 16:46
Calibration Check	T002132-CCV3	07081025.D	07/08/10 19:07

Directory: C:\HPCHEM\4\DATA\070810F1

Injection Log

4FF3010M.m

4F

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	07081002.d	1.	PRIMER		8 Jul 2010 12:18
2	2	07081004.d	1.	HEXANE#PT01346		8 Jul 2010 12:41
3	4	07081006.d	1.	T002132-ARC1 4868 1200ppb	1x PT01855	8 Jul 2010 13:04
4	3	07081008.d	1.	T002132-ARC2 4262 1200ppb	1x PT01646	8 Jul 2010 13:27
5	6	07081010.d	1.	T002132-CCV1 1660 1000-100ppb ok	1x PT001959	8 Jul 2010 13:50
6	5	07081012.d	1.	T002132-ARC4 2154 1200ppb	1x pt01968	8 Jul 2010 14:13
7	81	07081014.d	1.	PTF0829-02 10F0915	2x DL W/ HEX...	8 Jul 2010 15:37
8	82	07081016.d	1.	PTF0829-04 10F0915	2x DL W/ HEX...	8 Jul 2010 16:00
9	83	07081018.d	1.	PTF0829-06 10F0915	2x DL W/ HEX...	8 Jul 2010 16:23
10	84	07081020.d	1.	PTF0829-08 10F0915	2x DL W/ HEX...	8 Jul 2010 16:46
11	85	07081022.d	1.	T002132-CCV2 1660 1000-100ppb ↓ NR.	1x PT01959	8 Jul 2010 17:15
12	86	07081025.d	1.	T002132-CCV3 1660 1000-100ppb OK	1x PT01959	8 Jul 2010 19:07
13	87	07081027.d	1.	10G0223-BLK1 NR, RR	1x	8 Jul 2010 19:42
14	88	07081029.d	1.	10G0223-BS1	1x	8 Jul 2010 20:05
15	89	07081031.d	1.	10G0223-BSD1	1x	8 Jul 2010 20:28
16	90	07081033.d	1.	PTF0785-01 10G0223	50000x DL W/ ...	8 Jul 2010 20:51
17	91	07081035.d	1.	T002132-CCV4 1660 1000-100ppb	1x PT01959	8 Jul 2010 21:14

DL W/ HEX PT00880

vials witnessed [illegible]

[illegible] 7/12/10.

[illegible] 7/12/10

INITIAL CALIBRATION STANDARDS
EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T001998	Instrument:	GC4 Dual R
Calibration:	P10G039		

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
PT00689	AR 1660 Cal 50-5ppb	T001998-CAL1	06251011.D	06/25/10 12:42
PT00690	AR 1660 Cal 100-10ppb	T001998-CAL2	06251013.D	06/25/10 13:05
PT00691	AR 1660 Cal 200-20ppb	T001998-CAL3	06251015.D	06/25/10 13:28
PT00692	AR 1660 Cal 400-40ppb	T001998-CAL4	06251017.D	06/25/10 13:51
PT00693	AR 1660 Cal 800-80ppb	T001998-CAL5	06251019.D	06/25/10 14:14
PT00694	AR 1660 Cal 1000-100ppb	T001998-CAL6	06251021.D	06/25/10 14:36
PT00695	AR 1660 Cal 1200-120ppb	T001998-CAL7	06251023.D	06/25/10 14:59
PT00696	AR 1660 Cal 1600-160ppb	T001998-CAL8	06251025.D	06/25/10 15:22
PT00397	AR 1660 ICV (1ppm)	T001998-SCV1	06251027.D	06/25/10 15:45

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Sequence:	T001998	Instrument:	GC4 Dual R
		Calibration:	P10G039

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	T001998-CAL1	06251011.D	06/25/10 12:42
Cal Standard	T001998-CAL2	06251013.D	06/25/10 13:05
Cal Standard	T001998-CAL3	06251015.D	06/25/10 13:28
Cal Standard	T001998-CAL4	06251017.D	06/25/10 13:51
Cal Standard	T001998-CAL5	06251019.D	06/25/10 14:14
Cal Standard	T001998-CAL6	06251021.D	06/25/10 14:36
Cal Standard	T001998-CAL7	06251023.D	06/25/10 14:59
Cal Standard	T001998-CAL8	06251025.D	06/25/10 15:22
Secondary Cal Check	T001998-SCV1	06251027.D	06/25/10 15:45

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Sequence: T002112
Instrument: GC4 Dual R
Calibration: P10G039

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Aroclor Reference	T002112-ARC1	07071005.D	07/07/10 08:12
Aroclor Reference	T002112-ARC3	07071009.D	07/07/10 08:58
Calibration Check	T002112-CCV1	07071011.D	07/07/10 09:21
CS-15	PTF0829-31	07071013.D	07/07/10 09:52
CS-16	PTF0829-32	07071014.D	07/07/10 10:14
CS-6	PTF0829-22	07071015.D	07/07/10 10:37
CS-13	PTF0829-29	07071016.D	07/07/10 10:59
CS-14	PTF0829-30	07071017.D	07/07/10 11:21
Blank	10F0915-BLK1	07071018.D	07/07/10 11:44
LCS	10F0915-BS1	07071019.D	07/07/10 12:06
Calibration Check	T002112-CCV2	07071020.D	07/07/10 12:29
AS-7	PTF0829-07	07071021.D	07/07/10 12:52
AS-9	PTF0829-09	07071022.D	07/07/10 13:15
AS-10	PTF0829-10	07071023.D	07/07/10 13:41
AS-13	PTF0829-13	07071024.D	07/07/10 14:08
AS-14	PTF0829-14	07071025.D	07/07/10 14:34
CS-1	PTF0829-17	07071026.D	07/07/10 15:00
CS-3	PTF0829-19	07071027.D	07/07/10 15:27
CS-4	PTF0829-20	07071029.D	07/07/10 15:54
Calibration Check	T002112-CCV3	07071030.D	07/07/10 16:21
AS-1	10F0915-MS1	07071035.D	07/07/10 18:36
AS-1	10F0915-MSD1	07071036.D	07/07/10 19:02
Calibration Check	T002112-CCV4	07071038.D	07/07/10 19:54

Injection Log

Directory: C:\HPCHEM\4\DATA\070710R1

4RF2510M.M 4R

Line	Vial	FileName	Multiplier	SampleName		Misc Info		Injected
1	51	07071001.d	1.	Primer		1x		7 Jul 2010 07:26
2	52	07071003.d	1.	HEXANE#PT01346		1x		7 Jul 2010 07:49
3	3	07071005.d	1.	T002112-ARC1 4262 1200ppb		1x	PT01646	7 Jul 2010 08:12
4	4	07071007.d	1.	T002112-ARC2 4868 1200ppb		1x	PT01855	7 Jul 2010 08:35
5	5	07071009.d	1.	T002112-ARC3 2154 1200ppb		1x	pt01968	7 Jul 2010 08:58
6	6	07071011.d	1.	T002112-CCV1 1660 1000-100ppb ok		1x	PT001959	7 Jul 2010 09:21
7	15	07071013.d	1.	PTF0829-31	10g118	1x		7 Jul 2010 09:52
8	16	07071014.d	1.	PTF0829-32	10g118	1x		7 Jul 2010 10:14
9	17	07071015.d	1.	PTF0829-22	10g118	2x	dl w/ hex pt0...	7 Jul 2010 10:37
10	18	07071016.d	1.	PTF0829-29	10g118	20x	dl w/ hex pt...	7 Jul 2010 10:59
11	19	07071017.d	1.	PTF0829-30	10g118	20x	dl w/ hex pt...	7 Jul 2010 11:21
12	20	07071018.d	1.	10f0915-blk1		1x		7 Jul 2010 11:44
13	21	07071019.d	1.	10f0915-bs1		1x		7 Jul 2010 12:06
14	22	07071020.d	1.	T02112-CCV2 1660 1000-100ppb ok		1x	PT001959	7 Jul 2010 12:29
15	23	07071021.d	1.	PTF0829-07	10f0915	5x	dl w/ hex pt0...	7 Jul 2010 12:52
16	24	07071022.d	1.	PTF0829-09	10f0915	5x	dl w/ hex pt0...	7 Jul 2010 13:15
17	25	07071023.d	1.	PTF0829-10	10f0915	5x	dl w/ hex pt0...	7 Jul 2010 13:41
18	26	07071024.d	1.	PTF0829-13	10f0915	5x	dl w/ hex pt0...	7 Jul 2010 14:08
19	27	07071025.d	1.	PTF0829-14	10f0915	5x	dl w/ hex pt0...	7 Jul 2010 14:34
20	28	07071026.d	1.	PTF0829-17	10f0915	20x	dl w/ hex pt...	7 Jul 2010 15:00
21	29	07071027.d	1.	PTF0829-19	10f0915	20x	dl w/ hex pt...	7 Jul 2010 15:27
22	30	07071029.d	1.	PTF0829-20	10f0915	20x	dl w/ hex pt...	7 Jul 2010 15:54
23	31	07071030.d	1.	T02112-CCV3 1660 1000-100ppb ok		1x	PT001959	7 Jul 2010 16:21
24	32	07071031.d	1.	PTF0829-03	10f0915	2x	dl w/ hex pt0...	7 Jul 2010 16:50
25	33	07071032.d	1.	PTF0829-05	10f0915	2x	dl w/ hex pt0...	7 Jul 2010 17:17
26	34	07071033.d	1.	PTF0829-18	10f0915	10x	dl w/ hex pt...	7 Jul 2010 17:43
27	35	07071034.d	1.	PTF0829-01	10f0915	2x	dl w/ hex pt0...	7 Jul 2010 18:09
28	36	07071035.d	1.	10f0915-MS1		~~4x~~ 2x	dl w/ hex pt0...	7 Jul 2010 18:36
29	37	07071036.d	1.	10f0915-MSD1		~~4x~~ 2x	dl w/ hex pt0...	7 Jul 2010 19:02
30	38	07071037.d	1.	GPC BLK 6/30		1x		7 Jul 2010 19:28
31	39	07071038.d	1.	T02112-CCV4 1660 1000-100ppb		1x	PT001959	7 Jul 2010 19:54
32	40	07071039.d	1.	T02112-CCV5 1660 1000-100ppb		1x	PT001959	7 Jul 2010 22:15

vials witnessed

vials moved

RR. surr ↓ on ccv.

>rp 1260 + DCBP

>DCBP↓

witnessed LW

DL w/ HEX PT002580

✓ LWN 7/9/10

Form 5
ANALYSIS BATCH (SEQUENCE) SUMMARY
EPA 8082

Laboratory: TestAmerica Portland
Client: GeoPro Geologic Services
Sequence: T002133

SDG: PTF0829
Project: Calbag PCB Surface Washing Pilot Study
Instrument: GC4 Dual R
Calibration: P10G039

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Aroclor Reference	T002133-ARC1	07081005.D	07/08/10 13:04
Aroclor Reference	T002133-ARC3	07081009.D	07/08/10 13:50
Calibration Check	T002133-CCV1	07081011.D	07/08/10 14:13
AS-1	PTF0829-01	07081013.D	07/08/10 15:37
AS-3	PTF0829-03	07081015.D	07/08/10 16:00
AS-5	PTF0829-05	07081017.D	07/08/10 16:23
CS-2	PTF0829-18	07081019.D	07/08/10 16:46
Calibration Check	T002133-CCV3	07081024.D	07/08/10 19:07
AS-1	10F0915-MS2	07081026.D	07/08/10 19:42
AS-1	10F0915-MSD2	07081028.D	07/08/10 20:05
Calibration Check	T002133-CCV4	07081036.D	07/08/10 21:36

Directory: C:\HPCHEM\4\DATA\070810R1

Injection Log 4RF2510m.m 4R

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	51	07081001.d	1.	Primer	1x	8 Jul 2010 12:18
2	52	07081003.d	1.	HEXANE#PT01346	1x	8 Jul 2010 12:41
3	3	07081005.d	1.	T002133-ARC1 4262 1200ppb	1x PT01646	8 Jul 2010 13:04
4	4	07081007.d	1.	T002133-ARC2 4868 1200ppb	1x PT01855	8 Jul 2010 13:27
5	5	07081009.d	1.	T002133-ARC3 2154 1200ppb	1x pt01968	8 Jul 2010 13:50
6	6	07081011.d	1.	T002133-CCV1 1660 1000-100ppb OK	1x PT001959	8 Jul 2010 14:13
7	71	07081013.d	1.	PTF0829-01 10F0915	2x DL W/ HEX...	8 Jul 2010 15:37
8	72	07081015.d	1.	PTF0829-03 10F0915	4x DL W/ HEX...	8 Jul 2010 16:00
9	73	07081017.d	1.	PTF0829-05 10F0915	4x DL W/ HEX...	8 Jul 2010 16:23
10	74	07081019.d	1.	PTF0829-18 10F0915	10x DL W/ HE...	8 Jul 2010 16:46
11	75	07081021.d	1.	6/30 GPC BLK	1x	8 Jul 2010 17:15
12	76	07081023.d	1.	T002133-CCV2 1660 1000-100ppb (1260 DCBsl)	1x PT01959	8 Jul 2010 17:39
13	77	07081024.d	1.	T002133-CCV3 1660 1000-100ppb OK	1x PT01959	8 Jul 2010 19:07
14	26	07081026.d	1.	10F0915-MS1	5x DL W/ HEX PT...	8 Jul 2010 19:42
15	27	07081028.d	1.	10F0915-MSD1 > 1016 only	5x DL W/ HEX PT...	8 Jul 2010 20:05
16	28	07081030.d	1.	PTF0829-11 10F0915 NR RR	4x DL W/ HEX PT...	8 Jul 2010 20:28
17	29	07081032.d	1.	PTF0829-12 10F0915	4x DL W/ HEX PT...	8 Jul 2010 20:51
18	30	07081034.d	1.	PTF0785-01 10G0223	25000x DL W/ ...	8 Jul 2010 21:14
19	31	07081036.d	1.	T002133-CCV4 1660 1000-100ppb (1260 DCBsl)	1x PT01959	8 Jul 2010 21:36
20	32	07081037.d	1.	PTF0829-15 10F0915 NR, RR	2x DL W/ HEX ...	8 Jul 2010 21:58
21	33	07081038.d	1.	PTF0829-16 10F0915	2x DL W/ HEX ...	8 Jul 2010 22:21
22	87	07081039.d	1.	10G0223-BLK1		8 Jul 2010 22:43
23	88	07081040.d	1.	10G0223-BS1		8 Jul 2010 23:05
24	89	07081041.d	1.	10G0223-BSD1		8 Jul 2010 23:28
25	34	07081042.d	1.	T002133-CCV5 1660 1000-100ppb	1x PT01959	8 Jul 2010 23:50
26	100	07081043.d	1.	ISO-OCTANE	1x	9 Jul 2010 00:12
27	100	07081044.d	1.	ISO-OCTANE	1x	9 Jul 2010 00:35
28	100	07081045.d	1.	ISO-OCTANE	1x	9 Jul 2010 00:57
29	100	07081046.d	1.	ISO-OCTANE	1x	9 Jul 2010 01:19
30	100	07081047.d	1.	ISO-OCTANE	1x	9 Jul 2010 01:42
31	100	07081048.d	1.	ISO-OCTANE	1x	9 Jul 2010 02:04

Vials witnessed

DL w/ HEX PT00880

VRW 7/12/10

VRW 7/12/10

Form 5
ANALYSIS BATCH (SEQUENCE) SUMMARY
EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Sequence: T002147
Instrument: GC4 Dual R
Calibration: P10G039

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Aroclor Reference	T002147-ARC3	07091009.D	07/09/10 14:10
Calibration Check	T002147-CCV2	07091017.D	07/09/10 16:31
AS-11	PTF0829-11	07091018.D	07/09/10 16:54
AS-12	PTF0829-12	07091019.D	07/09/10 17:17
Calibration Check	T002147-CCV4	07091023.D	07/09/10 19:18

Directory: C:\HPCHEM\4\DATA\070910R1

Injection Log

* 4RF2510M.m

4R

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	51	07091001.d	1.	Primer	1x	9 Jul 2010 12:38
2	52	07091003.d	1.	HEXANE#PT01346	1x	9 Jul 2010 13:01
3	3	07091005.d	1.	T002147-ARC1 4262 1200ppb	1x PT01646	9 Jul 2010 13:24
4	4	07091007.d	1.	T002147-ARC2 4868 1200ppb	1x PT01855	9 Jul 2010 13:47
5	5	07091009.d	1.	T002147-ARC3 2154 1200ppb	1x pt01968	9 Jul 2010 14:10
6	6	07091011.d	1.	T002147-CCV1 1660 1000-100ppb	1x PT001959	9 Jul 2010 14:33
7	30	07091013.d	1.	PTF0785-01 10G0223	25000x DL W/ ...	9 Jul 2010 15:01
8	87	07091014.d	1.	10G0223-BLK1	RR	9 Jul 2010 15:24
9	88	07091015.d	1.	10G0223-BS1	RR	9 Jul 2010 15:46
10	89	07091016.d	1.	10G0223-BSD1	RR	9 Jul 2010 16:09
11	6	07091017.d	1.	T002147-CCV2 1660 1000-100ppb	1x PT01959	9 Jul 2010 16:31
12	28	07091018.d	1.	PTF0829-11 10F0915	4x RR,DL W/ H...	9 Jul 2010 16:54
13	29	07091019.d	1.	PTF0829-12 10F0915	4x RR,DL W/ H...	9 Jul 2010 17:17
14	36	07091020.d	1.	10G0020-BLK1	* 1x	9 Jul 2010 17:39
15	37	07091021.d	1.	10G0020-BS2	1x	9 Jul 2010 18:01
16	38	07091022.d	1.	T002147-CCV3 1660 1000-100ppb DCB	1x PT01959	9 Jul 2010 18:24
17	39	07091023.d	1.	T002147-CCV4 1660 1000-100ppb OK ✓	1x PT01959	9 Jul 2010 19:18

vials witnessed

file # 18-23 only. 4RF2510M.m

DL w/ HEX PT00880

\ KWC 7/12/10

7/12/10

INITIAL CALIBRATION STANDARDS

EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Sequence: T002162
Instrument: GC4 Dual R
Calibration: P10J009

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
PT00689	AR 1660 Cal 50-5ppb	T002162-CAL1	07121013.D	07/12/10 19:13
PT00690	AR 1660 Cal 100-10ppb	T002162-CAL2	07121015.D	07/12/10 19:36
PT00691	AR 1660 Cal 200-20ppb	T002162-CAL3	07121017.D	07/12/10 19:59
PT00692	AR 1660 Cal 400-40ppb	T002162-CAL4	07121019.D	07/12/10 20:21
PT00693	AR 1660 Cal 800-80ppb	T002162-CAL5	07121021.D	07/12/10 20:44
PT00694	AR 1660 Cal 1000-100ppb	T002162-CAL6	07121023.D	07/12/10 21:07
PT00695	AR 1660 Cal 1200-120ppb	T002162-CAL7	07121025.D	07/12/10 21:30
PT00696	AR 1660 Cal 1600-160ppb	T002162-CAL8	07121027.D	07/12/10 21:53
PT00397	AR 1660 ICV (1ppm)	T002162-SCV1	07121029.D	07/12/10 22:16

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Sequence: T002162
Instrument: GC4 Dual R
Calibration: P10J009

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Aroclor Reference	T002162-ARC1	07121005.D	07/12/10 16:39
Aroclor Reference	T002162-ARC2	07121007.D	07/12/10 17:02
Cal Standard	T002162-CAL1	07121013.D	07/12/10 19:13
Cal Standard	T002162-CAL2	07121015.D	07/12/10 19:36
Cal Standard	T002162-CAL3	07121017.D	07/12/10 19:59
Cal Standard	T002162-CAL4	07121019.D	07/12/10 20:21
Cal Standard	T002162-CAL5	07121021.D	07/12/10 20:44
Cal Standard	T002162-CAL6	07121023.D	07/12/10 21:07
Cal Standard	T002162-CAL7	07121025.D	07/12/10 21:30
Cal Standard	T002162-CAL8	07121027.D	07/12/10 21:53
Secondary Cal Check	T002162-SCV1	07121029.D	07/12/10 22:16
Calibration Check	T002162-CCV1	07121031.D	07/12/10 22:39
W-1	PTF0829-33	07121033.D	07/12/10 23:01
Calibration Check	T002162-CCV2	07121036.D	07/13/10 00:07

Injection Log

Directory: C:\HPCHEM\4\DATA\071210R1

~~4C~~ 4RG1210M.m

4R

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	51	07121001.d	1.	Primer		12 Jul 2010 15:52
2	52	07121003.d	1.	Hexane		12 Jul 2010 16:15
3	3	07121005.d	1.	T002147-ARC1 4262 1200ppb	PT01646	12 Jul 2010 16:39
4	4	07121007.d	1.	T002147-ARC2 2154 1200ppb	PT01968	12 Jul 2010 17:02
5	5	07121009.d	1.	T002147-ARC3 4868 1200ppb	PT01855	12 Jul 2010 18:27
6	6	07121011.d	1.	T002147-ARC4 1232 1200PPB	PT00620	12 Jul 2010 18:50
7	7	07121013.d	1.	T002147-CAL1 1660 50/5ppb	PT00689	12 Jul 2010 19:13
8	8	07121015.d	1.	T002147-CAL2 1660 100/10ppb	PT00690	12 Jul 2010 19:36
9	9	07121017.d	1.	T002147-CAL3 1660 200/20ppb	PT00691	12 Jul 2010 19:59
10	10	07121019.d	1.	T002147-CAL4 1660 400/40ppb	PT00692	12 Jul 2010 20:21
11	11	07121021.d	1.	T002147-CAL5 1660 800/80ppb	PT00693	12 Jul 2010 20:44
12	12	07121023.d	1.	T002147-CAL6 1660 1000/10ppb	PT00694	12 Jul 2010 21:07
13	13	07121025.d	1.	T002147-CAL7 1660 1200/12...	PT00695	12 Jul 2010 21:30
14	14	07121027.d	1.	T002147-CAL8 1660 1600/16...	PT00696	12 Jul 2010 21:53
15	15	07121029.d	1.	T002147-SCV1 1660 1000ppb OK±1%	PT00397	12 Jul 2010 22:16
16	16	07121031.d	1.	T002147-ccv1 1660 1000/10... OK	PT01959	12 Jul 2010 22:39
17	17	07121033.d	1.	ptf0829-33 10G0020	4x dl w/ hex pt0...	12 Jul 2010 23:01
18	18	07121034.d	1.	pt02019 20x RR >OK		12 Jul 2010 23:23
19	19	07121035.d	1.	pt02027 10x RR		12 Jul 2010 23:45
20	16	07121036.d	1.	T002147-ccv2 1660 1000/10... OK	PT01959	13 Jul 2010 00:07

DL w/ HEX PT00880

All sequence #'s should be T002162

La

\ 07/13/10

Form 5
ANALYSIS BATCH (SEQUENCE) SUMMARY
EPA 8082

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Sequence: T002178

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Instrument: GC4 Dual R

Calibration: P10J009

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Aroclor Reference	T002178-ARC3	07131009.D	07/13/10 13:12
Calibration Check	T002178-CCV1	07131011.D	07/13/10 13:35
AS-15	PTF0829-15	07131013.D	07/13/10 14:01
AS-16	PTF0829-16	07131015.D	07/13/10 14:24
Calibration Check	T002178-CCV2	07131026.D	07/13/10 17:45

Injection Log

Directory: C:\HPCHEM\4\DATA\071310R1

4R

4RG1210M.m

Line	Vial	FileName	Multiplier	SampleName	Misc Info		Injected
1	51	07131001.d	1.	Primer	1x		13 Jul 2010 11:40
2	52	07131003.d	1.	HEXANE#PT01346	1x		13 Jul 2010 12:03
3	3	07131005.d	1.	T002178-ARC1 4262 1200ppb	1x	PT01646	13 Jul 2010 12:26
4	4	07131007.d	1.	T002178-ARC2 4868 1200ppb	1x	PT01855	13 Jul 2010 12:49
5	5	07131009.d	1.	T002178-ARC3 2154 1200ppb	1x	pt01968	13 Jul 2010 13:12
6	6	07131011.d	1.	T002178-CCV1 1660 1000-100ppb OK	1x	PT001959	13 Jul 2010 13:35
7	7	07131013.d	1.	PTF0829-15 10F0915	2xRR	DL W/ H...	13 Jul 2010 14:01
8	8	07131015.d	1.	PTF0829-16 10F0915	2xRR	DL W/ H...	13 Jul 2010 14:24
9	9	07131017.d	1.	10G0309-blk1	1X		13 Jul 2010 14:47
10	10	07131019.d	1.	10G0309-BS1	1X		13 Jul 2010 15:09
11	11	07131020.d	1.	10G0309-BS2	1X		13 Jul 2010 15:31
12	12	07131021.d	1.	10G0309-BS3	1X		13 Jul 2010 15:54
13	13	07131022.d	1.	10G0309-BS4	1X		13 Jul 2010 16:16
14	14	07131023.d	1.	10G0309-BS5	1X		13 Jul 2010 16:38
15	15	07131024.d	1.	10G0309-BS6	1X		13 Jul 2010 17:00
16	16	07131025.d	1.	10G0309-BS7	1X		13 Jul 2010 17:22
17	17	07131026.d	1.	T002178-CCV2 1660 1000-100ppb OK	1x	PT01959	13 Jul 2010 17:45
18	18	07131027.d	1.	PT02027,10X			13 Jul 2010 18:51
19	19	07131028.d	1.	PT02019 ,20X			13 Jul 2010 19:13
20	17	07131029.d	1.	T002178-CCV3 1660 1000-100ppb OK	1x	PT01959	13 Jul 2010 19:34

vials witnessed

DL w/ HEX PT00880

7/14/10

7/14/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Semi-Volatile GC Analysis QCAR

Work Order #: PTF0829 Batch #: 10F0915 Test Code: JSC 8082PCB

Primary Review Date/Initial: ~~~~ 7/14/10

Secondary Review Date/Initial: ~~~~ 7/14/10

☐ Check here if data package is needed

Sample Integrity

✓	✓	Samples extracted within hold time
✓	✓	All work is completed according to work order
✓	✓	Special Instructions are checked

Data Analysis

—	✓	Initial data is checked vs. confirmation data (if applicable)
✓	✓	Proper dilution factors/multipliers are used
*	✓	Standards are within acceptance limits
✓	✓	Surrogates are within limits (or properly flagged if out)
✓	✓	Proper standards are used for quantitation
✓	✓	Concentrations are within calibration range
✓	✓	Data has been Q-edited
✓	✓	All prep and analysis bench sheets are fully completed
✓	✓	All chromatograms are included and labeled

Reporting

✓	✓	Units and significant figures are correct
✓	✓	Reporting limits are correct
✓	✓	Final report matches analytical results
✓	✓	Percent solids are included (if applicable)
✓	✓	Extraction and analysis dates and times are correct
✓	✓	Control limits are met for spike recoveries, proper comments included
✓	✓	Proper QC reports are included
✓	✓	Necessary comments are included
✓		Analytes and QC are updated to "analyzed" and locked
		Analytes and QC are updated to "reviewed"

Comments: * Ending CCV DCBP↓ for MS/MSD. see CAR # 3574

— [initials]

9405 SW Nimbus Avenue Beaverton, OR 97008 **tel** 503.906.9200 **fax** 503.906.9210 **www.testamericainc.com**

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Semi-Volatile GC Analysis QCAR

Work Order #: PTF0829 Batch #: 10G0020 Test Code: 8082

Primary Review Date/Initial: 07/13/10

Secondary Review Date/Initial: 7/13/10

☐ Check here if data package is needed

Sample Integrity

✓	✓	Samples extracted within hold time
✓	✓	All work is completed according to work order
✓	✓	Special Instructions are checked

Data Analysis

✓	✓	Initial data is checked vs. confirmation data (if applicable)
✓	✓	Proper dilution factors/multipliers are used
✓	✓	Standards are within acceptance limits
✓	✓	Surrogates are within limits (or properly flagged if out)
✓	✓	Proper standards are used for quantitation
✓	✓	Concentrations are within calibration range
✓	✓	Data has been Q-edited
✓	✓	All prep and analysis bench sheets are fully completed
✓		All chromatograms are included and labeled

Reporting

✓	✓	Units and significant figures are correct
✓	✓	Reporting limits are correct
✓	✓	Final report matches analytical results
NA	✓	Percent solids are included (if applicable)
✓	✓	Extraction and analysis dates and times are correct
✓	✓	Control limits are met for spike recoveries, proper comments included
✓	✓	Proper QC reports are included
✓	✓	Necessary comments are included
✓		Analytes and QC are updated to "analyzed" and locked
	✓	Analytes and QC are updated to "reviewed"

Comments:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Semi-Volatile GC Analysis QCAR

Work Order #: PTF0829 Batch #: 10G0118 Test Code: JSC8082

Primary Review Date/Initial: Secondary Review Date/Initial:

MMX 7/9/10 LAW 7/9/10

☐ Check here if data package is needed

Sample Integrity

✓ ✓ Samples extracted within hold time
✓ ✓ All work is completed according to work order
✓ ✓ Special Instructions are checked

Data Analysis

✓ ✓ Initial data is checked vs. confirmation data (if applicable)
✓ ✓ Proper dilution factors/multipliers are used
✓ ✓ Standards are within acceptance limits
✓ ✓ Surrogates are within limits (or properly flagged if out)
✓ ✓ Proper standards are used for quantitation
✓ ✓ Concentrations are within calibration range
✓ ✓ Data has been Q-edited
✓ ✓ All prep and analysis bench sheets are fully completed
✓ ✓ All chromatograms are included and labeled

Reporting

✓ ✓ Units and significant figures are correct
✓ ✓ Reporting limits are correct
✓ ✓ Final report matches analytical results
✓ ✓ Percent solids are included (if applicable)
✓ ✓ Extraction and analysis dates and times are correct
✓ ✓ Control limits are met for spike recoveries, proper comments included
✓ ✓ Proper QC reports are included
✓ ✓ Necessary comments are included
✓ Analytes and QC are updated to "analyzed" and locked
✓ Analytes and QC are updated to "reviewed"

Comments:

GC Semivolatile Organic Compounds

Preparation Logs

Form 4

PREPARATION BATCH SUMMARY

EPA 8082

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Batch: 10F0915 Batch Matrix: Soil Preparation: EPA 3550

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Blank	10F0915-BLK1	07071018.D	06/29/10 12:00	
LCS	10F0915-BS1	07071019.D	06/29/10 12:00	
AS-1	10F0915-MS1	07071035.D	06/29/10 12:00	
AS-1	10F0915-MS2	07081026.D	06/29/10 12:00	Added 7/20/2010 by LQN
AS-1	10F0915-MSD1	07071036.D	06/29/10 12:00	
AS-1	10F0915-MSD2	07081028.D	06/29/10 12:00	Added 7/20/2010 by LQN
AS-1	PTF0829-01	07081013.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-2	PTF0829-02	07081014.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-3	PTF0829-03	07081015.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-4	PTF0829-04	07081016.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-5	PTF0829-05	07081017.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-6	PTF0829-06	07081018.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-7	PTF0829-07	07071021.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-8	PTF0829-08	07081020.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-9	PTF0829-09	07071022.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-10	PTF0829-10	07071023.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-11	PTF0829-11	07091018.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-12	PTF0829-12	07091019.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-13	PTF0829-13	07071024.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-14	PTF0829-14	07071025.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-15	PTF0829-15	07131013.D	06/29/10 12:00	Need reporting limit of 10ppb
AS-16	PTF0829-16	07131015.D	06/29/10 12:00	Need reporting limit of 10ppb
CS-1	PTF0829-17	07071026.D	06/29/10 12:00	Need reporting limit of 10ppb
CS-2	PTF0829-18	07081019.D	06/29/10 12:00	Need reporting limit of 10ppb
CS-3	PTF0829-19	07071027.D	06/29/10 12:00	Need reporting limit of 10ppb
CS-4	PTF0829-20	07071029.D	06/29/10 12:00	Need reporting limit of 10ppb

QCAR - Organic Prep, Semi-Volatiles

Batch# 1070915 Prep Method/Analysis 3550 / 8082 Matrix Soil

Sample Integrity **Date/Initials** 6/29/10 WB

Is the method appropriate for the sample? Yes ✓ No ____
Is there adequate amount of sample? Yes ✓ No ____
Are the sample containers appropriate? Yes ✓ No ____
Are the samples within hold time? If not fill out a CAR. Yes ✓ No ____
Do sample ID's match the work order? Yes ✓ No ____
Is sample available for MS/MSD? Yes ✓ No ____

Extraction **Date/Initials** 6/29/10 WB

Was all glassware triple rinsed with solvent? Yes ✓ No ____
Was the "whole bottle extraction procedure" used if water? Yes ____ No NA

Concentration **Final Solvent:** Hexane

Samples transferred into KDs (date/init.) 6/29/10 WB

Macro conc. (date/init./temp.) 6/29/10 WB Micro conc. (date/init.) ________

If applicable:

- ☒ GPC
- ☐ OPP Soil: poured over Na_2SO_4 (date/init.) ________
  transferred into KDs (date/init.) ________

Macro conc. (date/init./temp.) 7/6/10 25° Micro conc. (date/init.) 7/6/10

Sample Vialing **Date/Initials** 7/6/10 UKW

Are the samples being brought to their normal final volume? Yes ✓ No ____
Is the solvent level indicated on the ALS vials? Yes NA No ____
Was the SOP followed with no deviation? If no, explain below. Yes ✓ No ____
Is the GPC or TCLP log attached (if applicable)? Yes ✓ No ____
Is the paperwork complete, correct and undated in the computer? Yes ✓ No ____

Comments: Samples 1-16 were asphalt & reduced Mass (≈30g) and increased volume (10mL) was used. WB 6/29/10

PREPARATION BENCH SHEET

Batch 10F0915

TestAmerica Portland

Printed: 6/29/2010 11:33:42AM

rep method: EPA 3550

latrix: Soil 24

60g

LWN 6/29/10

Surrogate 1: PT00358

b Number	Analysis	Prepared	Initial (g)	Init	Final (ml)	Init	Spike ID	Spike Amt (uL)	Init	Source ID	Surr 1 (uL)	Init	Surr 2 (uL)	Init	pH	Extraction Comments	By GPC Volume
F0915-BLK1	QC	06/29/10 10:40	~~60~~ 30.40		2						100						5mL
F0915-BS1	QC	06/29/10 10:40	~~60~~ 30.01		2		PT01300	200			100						5mL
F0915-MS1	QC	06/29/10 10:40	~~60~~ 30.92		2		PT01300	200		PTF0829-01	100						10mL
F0915-MSD1	QC	06/29/10 10:40	~~60~~ 32.17		2		PT01300	200		PTF0829-01	100						
F0829-01	JSC 8082 PCB	06/29/10 10:40	~~30~~ 30.15		2						100					Need reporting limit of 10ppb	
F0829-02	JSC 8082 PCB	06/29/10 10:40	30 .21		2						100					Need reporting limit of 10ppb	
F0829-03	JSC 8082 PCB	06/29/10 10:40	30 .57		2						100					Need reporting limit of 10ppb	
F0829-04	JSC 8082 PCB	06/29/10 10:40	30 .07		2						100					Need reporting limit of 10ppb	
F0829-05	JSC 8082 PCB	06/29/10 10:40	30 .56		2						100					Need reporting limit of 10ppb	
F0829-06	JSC 8082 PCB	06/29/10 10:40	30 .08		2						100					Need reporting limit of 10ppb	
F0829-07	JSC 8082 PCB	06/29/10 10:40	30 .02		2						100					Need reporting limit of 10ppb	
F0829-08	JSC 8082 PCB	06/29/10 10:40	30 .72		2						100					Need reporting limit of 10ppb	
F0829-09	JSC 8082 PCB	06/29/10 10:40	30 .31		2						100					Need reporting limit of 10ppb	
F0829-10	JSC 8082 PCB	06/29/10 10:40	30 .13		2						100					Need reporting limit of 10ppb	
F0829-11	JSC 8082 PCB	06/29/10 10:40	30 .13		2						100					Need reporting limit of 10ppb	
F0829-12	JSC 8082 PCB	06/29/10 10:40	30 .08		2						100					Need reporting limit of 10ppb	
F0829-13	JSC 8082 PCB	06/29/10 10:40	30 .33		2						100					Need reporting limit of 10ppb	
F0829-14	JSC 8082 PCB	06/29/10 10:40	30 .74		2						100					Need reporting limit of 10ppb	
F0829-15	JSC 8082 PCB	06/29/10 10:40	30 .07		2						100					Need reporting limit of 10ppb	
F0829-16	JSC 8082 PCB	06/29/10 10:40	30 .39		2						100					Need reporting limit of 10ppb	
F0829-17	JSC 8082 PCB	06/29/10 10:40	30.17		2						100					Need reporting limit of 10ppb	5mL
F0829-18	JSC 8082 PCB	06/29/10 10:40	30.32		2						100					Need reporting limit of 10ppb	
F0829-19	JSC 8082 PCB	06/29/10 10:40	30.24		2						100					Need reporting limit of 10ppb	
F0829-20	JSC 8082 PCB	06/29/10 10:40	30.04		2						100					Need reporting limit of 10ppb	

6/29/10 Noon [illegible]

* GPC *

Final volume adjusted to 4mL in ELMNT to reflect dilution on GPC. LWN 9/6/10

Spiking Witnessed By _______ Date 6-29-10

Preparation Reviewed By [illegible] Date 7/7/10

PREPARATION BENCH SHEET

Batch 10F0915

TestAmerica Portland

Printed: 6/29/2010 11:33:42AM

Prep method: EPA 3550

Matrix: Soil

Surrogate 1: PT00358

Lab Number	Analysis	Prepared	Initial (g)	Init	Final (ml)	Init	Spike ID	Spike Amt (uL)	Init	Source ID	Surr 1 (uL)	Init	Surr 2 (uL)	Init	pH	Extraction Comments

Batch Comments:
DCM# PT01160
ACETONE# PT00990
GLASSWOOL# 00509001
Na2SO4# 084109
FILTER PAPER# WHATMAN 41
BALANCE ID# NCAP-0087
HEXANE# PT00880
H2SO4# ~~9080272~~ PT00865 lw 7/7/10

Spiking Witnessed By Date

Preparation Reviewed By Date

Sequence Log Report

J2 SCIENTIFIC

Print Date: 7/2/2010
Print Time 9:57:07AM

Sequence: **063010A**

Pos #	Sample ID	Description	Method	Inject uL	Column	Status	Comments
1	06/30/10	GPC BLK	P_P_062910	5000	ABC 1	Sample processed normally	
2	10F0915	BLK	P_P_062910	5000	ABC 1	Sample processed normally	
3	10F0915	BS1	P_P_062910	5000	ABC 1	Sample processed normally	
4	10F0915	MS1	P_P_062910	5000	ABC 1	Sample processed normally	
5	10F0915	MSD1	P_P_062910	5000	ABC 1	Sample processed normally	
6	10F0915	PTF0829-01	P_P_062910	5000	ABC 1	Sample processed normally	
7	10F0915	PTF0829-02	P_P_062910	5000	ABC 1	Sample processed normally	
8	10F0915	PTF0829-03	P_P_062910	5000	ABC 1	Sample processed normally	
9	10F0915	PTF0829-04	P_P_062910	5000	ABC 1	Sample processed normally	
10	10F0915	PTF0829-05	P_P_062910	5000	ABC 1	Sample processed normally	
11	10F0915	PTF0829-06	P_P_062910	5000	ABC 1	Sample processed normally	
12	10F0915	PTF0829-07	P_P_062910	5000	ABC 1	Sample processed normally	
13	10F0915	PTF0829-08	P_P_062910	5000	ABC 1	Sample processed normally	
14	10F0915	PTF0829-09	P_P_062910	5000	ABC 1	Sample processed normally	
15	10F0915	PTF0829-10	P_P_062910	5000	ABC 1	Sample processed normally	
16	10F0915	PTF0829-11	P_P_062910	5000	ABC 1	Sample processed normally	
17	10F0915	PTF0829-12	P_P_062910	5000	ABC 1	Sample processed normally	
18	10F0915	PTF0829-13	P_P_062910	5000	ABC 1	Sample processed normally	
19	10F0915	PTF0829-14	P_P_062910	5000	ABC 1	Sample processed normally	
20	10F0915	PTF0829-15	P_P_062910	5000	ABC 1	Sample processed normally	

Operator Name:
Notes:

Start: 16:25:36, 06/30/10
End: 17:30:26, 07/01/10

Outcome: Sequence executed normally

21	10F0915	PTF0829-16	P_P_062910	5000	ABC 1	Sample processed normally
22	10F0915	PTF0829-17	P_P_062910	5000	ABC 1	Sample processed normally
23	10F0915	PTF0829-18	P_P_062910	5000	ABC 1	Sample processed normally
24	10F0915	PTF0829-19	P_P_062910	5000	ABC 1	Sample processed normally
25	10F0915	PTF0829-20	P_P_062910	5000	ABC 1	Sample processed normally

Operator Name: **Start:** 16:25:36, 06/30/10

Notes: **End:** 17:30:26, 07/01/10 **Outcome:** Sequence executed normally

Form 4

PREPARATION BATCH SUMMARY

EPA 8082

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Batch: 10G0020 Batch Matrix: Water Preparation: EPA 3510/600 Series

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Blank	10G0020-BLK1	07091020.D	07/01/10 11:18	
LCS	10G0020-BS2	07091021.D	07/01/10 11:18	
W-1	PTF0829-33	07121033.D	07/01/10 11:18	added per client 6/29 ER, this one is not JSC per

QCAR - Organic Prep, Semi-Volatiles

Batch# 1060020 Prep Method/Analysis 3510-600/8082-8081 Matrix H_2O

Sample Integrity **Date/Initials** 7/1/10 MB

Is the method appropriate for the sample? Yes ✓ No ___
Is there adequate amount of sample? Yes ✓ No ___
Are the sample containers appropriate? Yes ✓ No ___
Are the samples within hold time? If not fill out a CAR. Yes ✓ No ___
Do sample ID's match the work order? Yes ✓ No ___
Is sample available for MS/MSD? Yes ___ No ✓

Extraction **Date/Initials** 7/1/10 MB

Was all glassware triple rinsed with solvent? Yes ✓ No ___
Was the "whole bottle extraction procedure" used if water? Yes ✓ No ___

Concentration **Final Solvent:** Hexane

Samples transferred into KDs (date/init.) 7/1/10 MB

Macro conc. (date/init./temp.) 7/1/10 MB 85 Micro conc. (date/init.) 7/1/10 MB

If applicable:

- ☐ GPC
- ☐ OPP Soil: poured over Na_2SO_4 (date/init.) ___
  transferred into KDs (date/init.) ___

Macro conc. (date/init./temp.) ___ Micro conc. (date/init.) ___

Sample Vialing **Date/Initials** 7/1/10 YMK

Are the samples being brought to their normal final volume? Yes ✓ No ___
Is the solvent level indicated on the ALS vials? Yes ___ No ✓
Was the SOP followed with no deviation? If no, explain below. Yes ✓ No ___
Is the GPC or TCLP log attached (if applicable)? Yes ___ No ___ NA
Is the paperwork complete, correct and undated in the computer? Yes ✓ No ___

Comments: ___

PREPARATION BENCH SHEET

Batch 10G0020

TestAmerica Portland

Printed: 7/1/2010 11:21:35AM

rep method: EPA 3510/600 Series

Iatrix: Water

Surrogate 1: PT00358

(6)

ab Number	Analysis	Prepared	Initial (ml)	Init	Final (ml)	Init	Spike ID	Spike Amt (uL)	Init	Source ID	Surr 1 (uL)	Init	Surr 2 (uL)	Init	pH	Extraction Comments
G0020-BLK1	QC	07/01/10 11:18	1000	LB	5	YW					250				7	
G0020-BS1	QC	07/01/10 11:18	1000		5		PT00971	500	LB		250					
G0020-BS2	QC	07/01/10 11:18	1000		5		PT01300	500			250					
G0020-BSD1	QC	07/01/10 11:18	1000		5		PT00971	500			250					
F0671-01RE1	608 Pest/PCB Full QC	07/01/10 11:18	~~1000~~ 1020		5						250					Re-extract added 6/30/2010 by YX
F0829-33	8082 PCB	07/01/10 11:18	~~1000~~ 1050		5						250					added per client 6/29 ER, this one is not JSC per

Batch Comments:
DCM# PT01562
GLASSWOOL# 00509001
Na2SO4# 10020
HEXANE#pt01346

H_2SO_4 9080272

No Starting time: used current Element time

Spiking Witnessed By: [signature] Date: 7-1-10

Preparation Reviewed By: DH Date: 7/2/10

Form 4

PREPARATION BATCH SUMMARY

EPA 8082

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Batch: 10G0118 Batch Matrix: Soil Preparation: EPA 3550

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Blank	10G0118-BLK1	07061041.D	07/06/10 11:30	
LCS	10G0118-BS1	07061042.D	07/06/10 11:30	
CS-5	PTF0829-21	07061033.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-6	PTF0829-22	07071015.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-7	PTF0829-23	07061035.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-8	PTF0829-24	07061036.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-9	PTF0829-25	07061037.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-10	PTF0829-26	07061038.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-11	PTF0829-27	07061039.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-12	PTF0829-28	07061040.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-13	PTF0829-29	07071016.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-14	PTF0829-30	07071017.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-15	PTF0829-31	07071013.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb
CS-16	PTF0829-32	07071014.D	07/06/10 11:30	Level III DDP, Need reporting limit of 10ppb

QCAR - Organic Prep, Semi-Volatiles

Batch# 11260 NJ Prep Method/Analysis 3550 / 8082 Matrix Soil

Sample Integrity **Date/Initials** 7/6/10

Is the method appropriate for the sample? Yes ✓ No ____
Is there adequate amount of sample? Yes ✓ No ____
Are the sample containers appropriate? Yes ✓ No ____
Are the samples within hold time? If not fill out a CAR. Yes ✓ No ____
Do sample ID's match the work order? Yes ____ No ____
Is sample available for MS/MSD? Yes ✓ No ____

Extraction **Date/Initials** 7/6/10

Was all glassware triple rinsed with solvent? Yes X No ____
Was the "whole bottle extraction procedure" used if water? Yes ____ No NA

Concentration **Final Solvent:** Hexane

Samples transferred into KDs (date/init.) 7/6/10

Macro conc. (date/init./temp.) 7/6/10 Micro conc. (date/init.) 7/6/10

If applicable:

- ☐ GPC
- ☐ OPP Soil: poured over Na_2SO_4 (date/init.) ________
  transferred into KDs (date/init.) ________

Macro conc. (date/init./temp.) ________ Micro conc. (date/init.) ________

Sample Vialing **Date/Initials** 7/6/10 YAW

Are the samples being brought to their normal final volume? Yes ✓ No ____
Is the solvent level indicated on the ALS vials? Yes ____ No ✓
Was the SOP followed with no deviation? If no, explain below. Yes ____ No ____
Is the GPC or TCLP log attached (if applicable)? Yes ____ No NA
Is the paperwork complete, correct and updated in the computer? Yes ✓ No ____

Comments:

PREPARATION BENCH SHEET

Batch 10G0118

TestAmerica Portland

Printed: 7/6/2010 11:10:22AM

rep method: EPA 3550 (16)

latrix: Soil

Surrogate 1: PT00358

b Number	Analysis	Prepared	Initial (g)	Init	Final (ml)	Init	Spike ID	Spike Amt (uL)	Init	Source ID	Surr 1 (uL)	Init	Surr 2 (uL)	Init	pH	Extraction Comments
G0118-BLK1	QC	07/06/10 11:09	60 .41		2						100					
G0118-BS1	QC	07/06/10 11:09	60 .13		2		PT01300	200			100					
G0118-MS1	QC	07/06/10 11:09	60 .54		2		PT01300	200		PTF0829-21	100					
G0118-MSD1	QC	07/06/10 11:09	60 .01		2		PT01300	200		PTF0829-21	100					
F0829-21	JSC 8082 PCB	07/06/10 11:09	60 .32		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-22	JSC 8082 PCB	07/06/10 11:09	60 .16		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-23	JSC 8082 PCB	07/06/10 11:09	60 .29		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-24	JSC 8082 PCB	07/06/10 11:09	60 .07		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-25	JSC 8082 PCB	07/06/10 11:09	60 .77		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-26	JSC 8082 PCB	07/06/10 11:09	~~60~~ 61.02		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-27	JSC 8082 PCB	07/06/10 11:09	60 .30		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-28	JSC 8082 PCB	07/06/10 11:09	60 .44		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-29	JSC 8082 PCB	07/06/10 11:09	60 .33		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-30	JSC 8082 PCB	07/06/10 11:09	60 .07		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-31	JSC 8082 PCB	07/06/10 11:09	60 .98		2						100					Level III DDP, Need reporting limit of 10ppb
F0829-32	JSC 8082 PCB	07/06/10 11:09	60 .97		2						100					Level III DDP, Need reporting limit of 10ppb

7/6/10 11:30

atch Comments:
CM# PT01160
CETONE# PT00990
LASSWOOL# 00509001
la2SO4# 084109
ILTER PAPER# WHATMAN 41
ALANCE ID# NCAP-0087
IEXANE# PT00880
I2SO4# ~~9080272~~
PT00865

iking Witnessed By ____ Date 7/6/10

Preparation Reviewed By ____ Date 7/7/10

Metals

9405 SW Nimbus Avenue Beaverton, OR 97008 **tel** 503.906.9200 **fax** 503.906.9210 **www.testamericainc.com**

ANALYSES DATA PACKAGE COVER PAGE

1311/6020

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study

Client Sample Id:	**Lab Sample Id:**
W-1	PTF0829-33

ANALYSES DATA PACKAGE COVER PAGE
1311/7470A

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study

Client Sample Id:	Lab Sample Id:
W-1	PTF0829-33

THE LEADER IN ENVIRONMENTAL TESTING

ICP/MS Metals

Target Analyte Results Summaries

Form 1

INORGANIC ANALYSIS DATA SHEET

1311/6020

W-1

Laboratory: TestAmerica Portland | SDG: PTF0829

Client: GeoPro Geologic Services | Project: Calbag PCB Surface Washing Pilot Study

Matrix: Water | Laboratory ID: PTF0829-33 | File ID: 109.D

Sampled: 06/27/10 13:47 | Prepared: 07/06/10 22:55 | Analyzed: 07/07/10 18:36

Solids: 0.00 | Preparation: EPA 1311/3005 | Initial/Final: 5 ml / 50 ml

Batch: 10G0147 | Sequence: | Calibration: | Instrument: 7500CE

CAS NO.	Analyte	Concentration (mg/l)	Dilution Factor	Q	Method
7440-38-2	Arsenic	0.100	1	U	1311/6020
7440-39-3	Barium	0.393	1		1311/6020
7440-43-9	Cadmium	0.100	1	U	1311/6020
7440-47-3	Chromium	0.200	1	U	1311/6020
7439-92-1	Lead	1.58	1		1311/6020
7782-49-2	Selenium	0.130	1		1311/6020
7440-22-4	Silver	0.100	1	U	1311/6020

ICP/MS Metals

Quality Control Summaries

9405 SW Nimbus Avenue Beaverton, OR 97008 **tel** 503.906.9200 **fax** 503.906.9210 **www.testamericainc.com**

Form 1

METHOD BLANK DATA SHEET

1311/6020

Laboratory:	TestAmerica Portland		SDG:	PTF0829	
Client:	GeoPro Geologic Services		Project:	Calbag PCB Surface Washing Pilot Study	
Matrix:	Other wet	Laboratory ID:	10G0147-BLK1	File ID:	103.D
Prepared:	07/06/10 22:55	Preparation:	EPA 1311/3005	Initial/Final:	5 ml / 50 ml
Analyzed:	07/07/10 18:13	Instrument:	7500CE		
Batch:	10G0147	Sequence:		Calibration:	

CAS NO.	COMPOUND	CONC. (mg/l)	Q
7440-38-2	Arsenic	0.100	U
7440-39-3	Barium	0.100	U
7440-43-9	Cadmium	0.100	U
7440-47-3	Chromium	0.200	U
7439-92-1	Lead	0.100	U
7782-49-2	Selenium	0.100	U
7440-22-4	Silver	0.100	U

Laboratory Blanks Report
1311/6020

SDG: PTF0829

Batch: **10G0147** **Matrix:** **Other wet**

Blank: 10G0147-BLK1

Associated Samples

Laboratory ID:	Sample:	Analyzed:	Instrument:	File ID:
10G0147-BLK1	Blank	7/7/2010 6:13:00 PM	7500CE	103.D
10G0147-BS1	LCS	7/7/2010 6:17:00 PM	7500CE	104.D
10G0147-MS1	Matrix Spike	7/7/2010 6:32:00 PM	7500CE	108.D
PTF0829-33	W-1	7/7/2010 6:36:00 PM	7500CE	109.D

Form 3

LCS / LCS DUPLICATE RECOVERY

1311/6020

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Other wet	Spike standard:	9090044
Batch:	10G0147	Laboratory ID:	10G0147-BS1
Preparation:	EPA 1311/3005	Initial/Final:	5 ml / 50 ml

COMPOUND	SPIKE ADDED (mg/l)	LCS CONCENTRATION (mg/l)	LCS % REC. #	QC LIMITS REC.
Arsenic	10.0	9.95	99.5	80 - 120
Barium	10.0	9.65	96.5	80 - 120
Cadmium	10.0	9.99	99.9	80 - 120
Chromium	10.0	9.81	98.1	80 - 120
Lead	10.0	9.91	99.1	80 - 120
Selenium	10.0	10.0	100	80 - 120
Silver	5.00	5.10	102	80 - 120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Form 3
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
1311/6020

Matrix Spike

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Matrix: Other wet
Spike standard: 9090044
Batch: 10G0147
Laboratory ID: 10G0147-MS1
Preparation: EPA 1311/3005
Initial/Final: 5 ml / 50 ml
Source Sample Name: Matrix Spike

COMPOUND	SPIKE ADDED (mg/l)	SAMPLE CONCENTRATION (mg/l)	MS CONCENTRATION (mg/l)	MS % REC. #	QC LIMITS REC.
Arsenic	10.0	0.0380	11.0	110	75 - 125
Barium	10.0	ND	9.50	95.0	75 - 125
Cadmium	10.0	ND	10.2	102	75 - 125
Chromium	10.0	ND	9.89	98.9	75 - 125
Lead	10.0	0.0440	9.08	90.4	75 - 125
Selenium	10.0	0.147	11.7	116	75 - 125
Silver	5.00	ND	4.92	98.4	50 - 150

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Serial Dilution Summary Form

1311/6020

SDG: PTF0829

Instrument: 7500CE

Sequence: 070710.B

Calibration: 07/07/2010 Cal. 3

Dilution Factor: 5

Sample: 10G0147-SD1
File ID: 107.D
Analyzed: 7/7/2010 6:28:00 PM

Source Sample: 10G0147-MS1
File ID: 108.D
Analyzed: 7/7/2010 6:32:00 PM

Analyte:	SRD Conc. Diluted (ug/L)	SRD Conc. (ug/L)	Source Conc. (ug/L)	MRL (ug/L)	% D
Arsenic	202.7	1013.5	1102	10	-8
Barium	184.7	923.5	950.1	10	-2.8
Cadmium	197.2	986	1021	10	-3.4
Chromium	188.2	941	988.8	20	-4.8
Lead	185.9	929.5	908	10	2.4
Selenium	213.5	1067.5	1173	10	-9
Silver	97.52	487.6	492.2	10	-0.9

Acceptance Criteria: %D ± 10

Continuing Calibration Summary Form
1311/6020

SDG: PTF0829 | **Sequence:** 070710.B

Instrument: 7500CE | **Calibration:** 07/07/2010 Cal. 3

File ID:	Lab Number:	Analyzed:
099.D	ICV	7/7/2010 5:57:00 PM

Analyte	Result (ug/L)	Expected (ug/L)	% D
Arsenic	97	100	-3
Barium	93.9	100	-6.1
Cadmium	101.2	100	1.2
Chromium	99.2	100	-0.8
Lead	99.3	100	-0.7
Selenium	101.1	100	1.1
Silver	51	50	2

File ID:	Lab Number:	Analyzed:
113.D	CCV	7/7/2010 6:52:00 PM

Analyte	Result (ug/L)	Expected (ug/L)	% D
Arsenic	49.2	50	-1.5
Barium	93.7	100	-6.3
Cadmium	49.9	50	-0.1
Chromium	95.2	100	-4.8
Lead	95.8	100	-4.2
Selenium	50.6	50	1.1
Silver	49.9	50	-0.2

Acceptance Criteria: %D ± 10

Continuing Calibration Blanks Summary Form
1311/6020

SDG: PTF0829 | **Sequence:** 070710.B

Instrument: 7500CE | **Calibration:** 07/07/2010 Cal. 3

File ID:	Lab Number:	Analyzed:
100.D	ICB	7/7/2010 6:01:00 PM

Analyte	Result (ug/L)	MRL (ug/L)
Arsenic	ND	10
Barium	ND	10
Cadmium	ND	10
Chromium	ND	20
Lead	ND	10
Selenium	ND	10
Silver	ND	10

File ID:	Lab Number:	Analyzed:
114.D	CCB	7/7/2010 6:56:00 PM

Analyte	Result (ug/L)	MRL (ug/L)
Arsenic	ND	10
Barium	ND	10
Cadmium	ND	10
Chromium	ND	20
Lead	ND	10
Selenium	ND	10
Silver	ND	10

Acceptance Criteria: < 1/2 MRL

Interference Check Standard Summary Form
1311/6020

SDG: PTF0829 **Sequence:** 070710.B

Instrument: 7500CE **Calibration:** 07/07/2010 Cal. 3

Sample: ICSA **File ID:** 101.D

Analyzed: 7/7/2010 6:05:00 PM **Dilution Factor** 10

Analyte	Concentration (ug/L)	Expected (ug/L)	MRL (ug/L)	Result (ug/L)	% D
Aluminum	102200	100000	NA	NA	2.20
Arsenic	0.294	NA	10	ND	NA
Barium	1.221	NA	10	ND	NA
Cadmium	2.259	NA	10	ND	NA
Chromium	1.069	NA	20	ND	NA
Iron	100000	100000	NA	NA	0.00
Lead	0.198	NA	10	ND	NA
Magnesium	97530	100000	NA	NA	-2.47
Selenium	-0.097	NA	10	ND	NA
Silver	0.02	NA	10	ND	NA

Sample: ICSAB **File ID:** 102.D

Analyzed: 7/7/2010 6:09:00 PM **Dilution Factor** 10

Analyte	Concentration (ug/L)	Expected (ug/L)	MRL (ug/L)	Result (ug/L)	% D
Aluminum	106800	100000	NA	NA	6.80
Arsenic	103.5	100	10	103.5	3.50
Barium	1.46	NA	10	ND	NA
Cadmium	108.8	100	10	108.8	8.80
Chromium	210.8	200	20	210.8	5.40
Iron	103700	100000	NA	NA	3.70
Lead	0.481	NA	10	ND	NA
Magnesium	100800	100000	NA	NA	0.80
Selenium	106.5	100	10	106.5	6.50
Silver	207	200	10	207	3.50

Acceptance Criteria: %D ± 20

METHOD DETECTION AND REPORTING LIMITS

1311/6020

Laboratory: TestAmerica Portland **SDG:** PTF0829

Client: GeoPro Geologic Services **Project:** Calbag PCB Surface Washing Pilot Stu

Matrix: Other wet **Instrument:** 7500CE

Analyte	MDL	MRL	Units
Arsenic	0.00130	0.0100	mg/l
Barium	0.00177	0.0100	mg/l
Cadmium	0.00189	0.0100	mg/l
Chromium	0.00844	0.0200	mg/l
Lead	0.00111	0.0100	mg/l
Selenium	0.000920	0.0100	mg/l
Silver	0.000180	0.0100	mg/l

Linear Range Standard Summary
1311/6020

SDG: PTF0829

Instrument: 7500CE
Sequence: 070710.B

No Linear Range Standards were analyzed with the specified sequence.

Analyte concentrations which are greater than the high point of the calibration curve are not reported.

Sequence Summary Form

1311/6020

SDG: **PTF0829** **Sequence:** **070710.B**

Instrument: **7500CE** **Calibration:** **07/07/2010 Cal. 3**

File ID:	Lab Number:	Sample Name:	Analyzed:
091.D	Rinse		7/7/2010 5:26:00 PM
092.D	cal1	Calibration Standard S0	7/7/2010 5:30:00 PM
093.D	cal2	Calibration Standard S1	7/7/2010 5:34:00 PM
094.D	cal3	Calibration Standard S2	7/7/2010 5:38:00 PM
095.D	cal4	Calibration Standard S3	7/7/2010 5:42:00 PM
096.D	cal5	Calibration Standard S4	7/7/2010 5:46:00 PM
097.D	cal6	Calibration Standard S5	7/7/2010 5:50:00 PM
098.D	Rinse		7/7/2010 5:53:00 PM
099.D	ICV	Initial Calibration Check Standard	7/7/2010 5:57:00 PM
100.D	ICB	Initial Calibration Blank	7/7/2010 6:01:00 PM
101.D	ICSA	ICSA	7/7/2010 6:05:00 PM
102.D	ICSAB	ICSAB	7/7/2010 6:09:00 PM
103.D	10G0147-BLK1	Blank	7/7/2010 6:13:00 PM
104.D	10G0147-BS1	Blank Spike (LCS)	7/7/2010 6:17:00 PM
106.D	PTF0823-01	KB10-59 10G0147 6020	7/7/2010 6:24:00 PM
107.D	10G0147-SD1	Serial Dilution	7/7/2010 6:28:00 PM
108.D	10G0147-MS1	Matrix Spike	7/7/2010 6:32:00 PM
109.D	PTF0829-33	W-1	7/7/2010 6:36:00 PM
113.D	CCV	Calibration Check Standard	7/7/2010 6:52:00 PM
114.D	CCB	Calibration Blank	7/7/2010 6:56:00 PM

Data File List

Directory : C:\ICPCHEM\1\DATA\070710.B

Instrument: 7500CE
Sequence: 070710.B

Line	File Name	Sample Name	Misc Info	Acquired Date
1	001.D	Rinse		2010/07/07 10:04
2	002.D	Rinse		2010/07/07 10:08
3	003.D	cal1	S0	2010/07/07 10:12
4	004.D	cal2	S1	2010/07/07 10:16
5	005.D	cal3	S2	2010/07/07 10:20
6	006.D	cal4	S3	2010/07/07 10:23
7	007.D	cal5	S4	2010/07/07 10:27
8	008.D	cal6	S5	2010/07/07 10:31
9	009.D	Rinse		2010/07/07 10:35
10	010.D	ICV		2010/07/07 10:38
11	011.D	ICB		2010/07/07 10:42
12	012.D	ICSA	ICSA	2010/07/07 10:46
13	013.D	ICSAB	ICSAB	2010/07/07 10:50
14	014.D	ICV		2010/07/07 10:54
15	015.D	ICB		2010/07/07 10:58
16	016.D	ICSA	ICSA	2010/07/07 11:01
17	017.D	ICSAB	ICSAB	2010/07/07 11:05
18	033.D	Rinse		2010/07/07 13:27
19	034.D	Rinse		2010/07/07 13:31
20	035.D	cal1	S0	2010/07/07 13:35
21	036.D	cal2	S1	2010/07/07 13:39
22	037.D	cal3	S2	2010/07/07 13:43
23	038.D	cal4	S3	2010/07/07 13:46
24	039.D	cal5	S4	2010/07/07 13:50
25	040.D	cal6	S5	2010/07/07 13:54
26	041.D	Rinse		2010/07/07 13:58
27	042.D	ICV		2010/07/07 14:02
28	043.D	ICB		2010/07/07 14:05
29	044.D	ICSA	ICSA	2010/07/07 14:09
30	045.D	ICSAB	ICSAB	2010/07/07 14:13
31	046.D	10G0134-BLK1	M10-252 10G0134 200.8/6020	2010/07/07 14:24
32	047.D	10G0134-BS1	M10-252 10G0134 200.8/6020	2010/07/07 14:28
33	048.D	PTG0037-01	M10-252 10G0134 200.8/6020	2010/07/07 14:32
34	049.D	10G0134-DUP1	M10-252 10G0134 200.8/6020	2010/07/07 14:38
35	050.D	PTG0050-01	M10-252 10G0134 200.8/6020	2010/07/07 14:42
36	051.D	10G0134-SD1	M10-252 10G0134 200.8/6020	2010/07/07 14:46
37	052.D	10G0134-MS1	M10-252 10G0134 200.8/6020	2010/07/07 14:49
38	053.D	PTG0053-02	M10-252 10G0134 200.8/6020	2010/07/07 14:53
39	054.D	PTG0058-01	M10-252 10G0134 200.8/6020	2010/07/07 14:57
40	055.D	PTG0059-01	M10-252 10G0134 200.8/6020	2010/07/07 15:01
41	056.D	CCV		2010/07/07 15:05
42	057.D	CCB		2010/07/07 15:08
43	058.D	PTG0059-02	M10-252 10G0134 200.8/6020	2010/07/07 15:12
44	059.D	PTG0066-02	M10-252 10G0134 200.8/6020	2010/07/07 15:16
45	060.D	PTG0069-02	M10-252 10G0134 200.8/6020	2010/07/07 15:20
46	061.D	CCV		2010/07/07 15:24
47	062.D	CCB		2010/07/07 15:28
48	063.D	10G0135-BLK1	M10-253 10G0135 200.8	2010/07/07 15:32
49	064.D	10G0135-BS1	M10-253 10G0135 200.8	2010/07/07 15:38
50	065.D	PTF0923-01	M10-253 10G0135 200.8	2010/07/07 15:44
51	066.D	10G0135-DUP1	M10-253 10G0135 200.8	2010/07/07 15:48
52	067.D	PTF0923-02	M10-253 10G0135 200.8	2010/07/07 15:52
53	068.D	10G0135-MS1	M10-253 10G0135 200.8	2010/07/07 15:56
54	069.D	PTF0923-03	M10-253 10G0135 200.8	2010/07/07 16:00
55	070.D	PTF0923-04	M10-253 10G0135 200.8	2010/07/07 16:04
56	071.D	PTF0923-05	M10-253 10G0135 200.8	2010/07/07 16:08
57	072.D	PTF0923-06	M10-253 10G0135 200.8	2010/07/07 16:11
58	073.D	CCV		2010/07/07 16:15
59	074.D	CCB		2010/07/07 16:19
60	075.D	CCV		2010/07/07 16:23
61	076.D	CCB		2010/07/07 16:27
62	077.D	PTF0923-07	M10-253 10G0135 200.8	2010/07/07 16:31
63	078.D	PTF0923-08	M10-253 10G0135 200.8	2010/07/07 16:35

Data File List

Directory : C:\ICPCHEM\1\DATA\070710.B

Instrument: 7500CE
Sequence: 070710.B

Line	File Name	Sample Name	Misc Info	Acquired Date
64	079.D	PTG0059-01	M10-253 10G0135 200.8	2010/07/07 16:39
65	080.D	PTG0059-02	M10-253 10G0135 200.8	2010/07/07 16:43
66	081.D	PTG0037-01	M10-252 10G0134 200.8/6020	2010/07/07 16:47
67	082.D	10G0134-DUP1	M10-252 10G0134 200.8/6020	2010/07/07 16:50
68	083.D	PTG0050-01	M10-252 10G0134 200.8/6020	2010/07/07 16:54
69	084.D	10G0134-SD1	M10-252 10G0134 200.8/6020	2010/07/07 16:58
70	085.D	10G0134-MS1	M10-252 10G0134 200.8/6020	2010/07/07 17:02
71	086.D	CCV		2010/07/07 17:07
72	087.D	CCB		2010/07/07 17:11
73	088.D	CCV		2010/07/07 17:15
74	089.D	CCB		2010/07/07 17:19
75	090.D	Rinse		2010/07/07 17:22
76	091.D	Rinse		2010/07/07 17:26
77	092.D	cal1	S0	2010/07/07 17:30
78	093.D	cal2	S1	2010/07/07 17:34
79	094.D	cal3	S2	2010/07/07 17:38
80	095.D	cal4	S3	2010/07/07 17:42
81	096.D	cal5	S4	2010/07/07 17:46
82	097.D	cal6	S5	2010/07/07 17:50
83	098.D	Rinse		2010/07/07 17:53
84	099.D	ICV		2010/07/07 17:57
85	100.D	ICB		2010/07/07 18:01
86	101.D	ICSA	ICSA	2010/07/07 18:05
87	102.D	ICSAB	ICSAB	2010/07/07 18:09
88	103.D	10G0147-BLK1	KB10-59 10G0147 6020	2010/07/07 18:13
89	104.D	10G0147-BS1	KB10-59 10G0147 6020	2010/07/07 18:17
90	105.D	PTF0822-01	KB10-59 10G0147 6020	2010/07/07 18:21
91	106.D	PTF0823-01	KB10-59 10G0147 6020	2010/07/07 18:24
92	107.D	10G0147-SD1	KB10-59 10G0147 6020	2010/07/07 18:28
93	108.D	10G0147-MS1	KB10-59 10G0147 6020	2010/07/07 18:32
94	109.D	PTF0829-33	KB10-59 10G0147 6020	2010/07/07 18:36
95	110.D	PTG0118-01	KB10-59 10G0147 6020	2010/07/07 18:40
96	111.D	PTG0037-01	M10-252 10G0134 200.8/6020	2010/07/07 18:44
97	112.D	10G0134-DUP1	M10-252 10G0134 200.8/6020	2010/07/07 18:48
98	113.D	CCV		2010/07/07 18:52
99	114.D	CCB		2010/07/07 18:56
100	115.D	10G0166-BLK1	M10-254 10G0166 6020/200.8	2010/07/07 19:00
101	116.D	10G0166-BS1	M10-254 10G0166 6020/200.8	2010/07/07 19:03
102	117.D	PTG0029-01	M10-254 10G0166 6020/200.8	2010/07/07 19:07
103	118.D	10G0166-DUP1	M10-254 10G0166 6020/200.8	2010/07/07 19:11
104	119.D	PTG0055-01	M10-254 10G0166 6020/200.8	2010/07/07 19:15
105	120.D	10G0166-MS2	M10-254 10G0166 6020/200.8	2010/07/07 19:19
106	121.D	PTG0055-03	M10-254 10G0166 6020/200.8	2010/07/07 19:23
107	122.D	PTG0063-01	M10-254 10G0166 6020/200.8	2010/07/07 19:27
108	123.D	PTG0073-01	M10-254 10G0166 6020/200.8	2010/07/07 19:31
109	124.D	PTG0075-01	M10-254 10G0166 6020/200.8	2010/07/07 19:35
110	125.D	CCV		2010/07/07 19:38
111	126.D	CCB		2010/07/07 19:42
112	127.D	PTG0077-01	M10-254 10G0166 6020/200.8	2010/07/07 19:46
113	128.D	PTG0080-01	M10-254 10G0166 6020/200.8	2010/07/07 19:50
114	129.D	PTG0080-02	M10-254 10G0166 6020/200.8	2010/07/07 19:54
115	130.D	PTG0081-01	M10-254 10G0166 6020/200.8	2010/07/07 19:58
116	131.D	PTG0108-01	M10-254 10G0166 6020/200.8	2010/07/07 20:02
117	132.D	10G0166-SD1	M10-254 10G0166 6020/200.8	2010/07/07 20:06
118	133.D	10G0166-MS1	M10-254 10G0166 6020/200.8	2010/07/07 20:10
119	134.D	PTG0108-02	M10-254 10G0166 6020/200.8	2010/07/07 20:13
120	135.D	PTG0108-03	M10-254 10G0166 6020/200.8	2010/07/07 20:17
121	136.D	PTG0108-04	M10-254 10G0166 6020/200.8	2010/07/07 20:21
122	137.D	CCV		2010/07/07 20:25
123	138.D	CCB		2010/07/07 20:29
124	139.D	PTG0114-01	M10-254 10G0166 6020/200.8	2010/07/07 20:33
125	140.D	Rinse		2010/07/07 20:37
126	141.D	air		2010/07/07 20:41

Data File List

Directory : C:\ICPCHEM\1\DATA\070710.B

Instrument: 7500CE
Sequence: 070710.B

Line	File Name	Sample Name	Misc Info	Acquired Date
127	TUNE1.D	EPA Tune		2010/07/07 09:52

Instrument: 7500CE
Sequence: 070710.B
Tune Report

P/A Factor Tuning Report

Acquired:Jul 7 2010 09:37 am

Mass[amu]	Element	P/A Factor
7	Li	Sensitivity too high
9	Be	Sensitivity too low
24	Mg	Sensitivity too high
27	Al	Sensitivity too high
45	Sc	Sensitivity too high
47	Ti	Sensitivity too low
51	V	0.094801
52	Cr	0.098458
55	Mn	0.100354
56	Fe	Sensitivity too high
59	Co	0.102884
60	Ni	Sensitivity too low
65	Cu	Sensitivity too low
72	Ge	0.104985
75	As	Sensitivity too low
78	Se	Sensitivity too low
103	Rh	Sensitivity too high
107	Ag	Sensitivity too low
111	Cd	Sensitivity too low
115	In	Sensitivity too high
118	Sn	Sensitivity too low
121	Sb	Sensitivity too low
137	Ba	Sensitivity too low
159	Tb	Sensitivity too high
205	Tl	0.116087
208	Pb	0.116848

===Detector Parameters===
Discriminator: 8.0 mV
Analog HV: 1680 V
Pulse HV: 1110 V

Instrument: 7500CE
Sequence: 070710.B
Tune Report

P/A Factor Tuning Report

Acquired:Jul 7 2010 09:43 am

Mass[amu]	Element	P/A Factor
7	Li	Sensitivity too high
9	Be	Sensitivity too low
24	Mg	Sensitivity too high
27	Al	Sensitivity too high
45	Sc	Sensitivity too high
47	Ti	Sensitivity too low
51	V	0.096341
52	Cr	0.099150
55	Mn	0.100943
56	Fe	Sensitivity too high
59	Co	0.103779
60	Ni	Sensitivity too low
65	Cu	Sensitivity too low
72	Ge	0.105549
75	As	Sensitivity too low
78	Se	Sensitivity too low
103	Rh	Sensitivity too high
107	Ag	0.110248
111	Cd	Sensitivity too low
115	In	Sensitivity too high
118	Sn	Sensitivity too low
121	Sb	Sensitivity too low
137	Ba	Sensitivity too low
159	Tb	Sensitivity too high
205	Tl	0.117810
208	Pb	0.118173

===Detector Parameters===
Discriminator: 8.0 mV
Analog HV: 1680 V
Pulse HV: 1110 V

P/A Factor Tuning Report

Acquired:Jul 7 2010 09:47 am

Mass[amu]	Element	P/A Factor
7	Li	Sensitivity too high
9	Be	0.081555
24	Mg	Sensitivity too high
27	Al	Sensitivity too high
45	Sc	Sensitivity too high
47	Ti	Sensitivity too low
51	V	0.096341
52	Cr	0.099150
55	Mn	0.100943
56	Fe	Sensitivity too high
59	Co	0.103779
60	Ni	0.106226
65	Cu	0.108266
72	Ge	0.106228
75	As	0.105499
78	Se	Sensitivity too low
103	Rh	Sensitivity too high
107	Ag	0.112370
111	Cd	0.112345
115	In	Sensitivity too high
118	Sn	0.112131
121	Sb	0.110738
137	Ba	0.112997
159	Tb	Sensitivity too high
205	Tl	0.119662
208	Pb	0.118173

===Detector Parameters===
Discriminator: 8.0 mV
Analog HV: 1680 V
Pulse HV: 1110 V

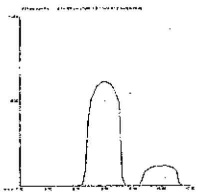
Instrument: 7500CE
Sequence: 070710.B
Tune Report

200.8 QC Tune Report

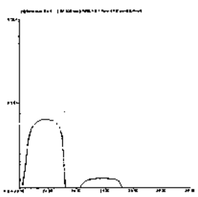
Data File:	C:\ICPCHEM\1\DATA\070710.B\TUNE1.D
Date Acquired:	Jul 7 2010 09:52 am
Acq. Method:	TN_2008.M
Operator:	AJH
Sample Name:	EPA Tune
Misc Info:	
Vial Number:	1
Current Method:	C:\ICPCHEM\1\METHODS\TN_2008.M

RSD (%)

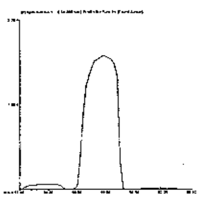
Element	Actual	Required	Flag
9 Be	0.46	5.00	
24 Mg	0.83	5.00	
59 Co	1.20	5.00	
115 In	1.18	5.00	
208 Pb	0.63	5.00	



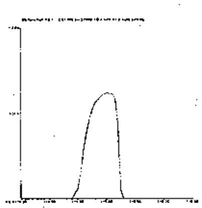
9 Be
Mass Calib.
Actual: 9.00
Required: 8.90 - 9.10
Flag:
Peak Width
Actual: 0.65
Required: 1.00
Flag:



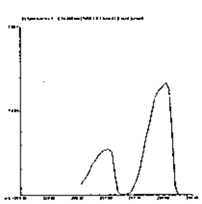
24 Mg
Mass Calib.
Actual: 23.95
Required: 23.90 - 24.10
Flag:
Peak Width
Actual: 0.65
Required: 1.00
Flag:



59 Co
Mass Calib.
Actual: 59.00
Required: 58.90 - 59.10
Flag:
Peak Width
Actual: 0.70
Required: 1.00
Flag:



115 In
Mass Calib.
Actual: 115.00
Required: 114.90 - 115.10
Flag:
Peak Width
Actual: 0.65
Required: 1.00
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90 - 208.10
Flag:
Peak Width
Actual: 0.60
Required: 1.00
Flag:

Tune Result: Pass

Internal Standards Relative Intensity Summary Form
1311/6020

SDG: PTF0829 **Sequence:** 070710.B

Instrument: 7500CE **Calibration:** 07/07/2010 Cal. 3

Reference Sample Analyzed: 7/7/2010 5:30:00 PM

File ID	Sample	Analyzed	Analyte	Reference Value	Result (Counts/Sec)	% R
091.D	Rinse	7/7/2010 5:26:00 PM	Germanium / 72 [#1]	94070	94614	100.6
091.D	Rinse	7/7/2010 5:26:00 PM	Germanium / 72 [#2]	29120	29093	99.9
091.D	Rinse	7/7/2010 5:26:00 PM	Rhodium / 103 [#3]	4007000	4029165	100.6
091.D	Rinse	7/7/2010 5:26:00 PM	Terbium / 159 [#3]	7341000	7372605	100.4
092.D	cal1	7/7/2010 5:30:00 PM	Germanium / 72 [#1]	94070	94071	100.0
092.D	cal1	7/7/2010 5:30:00 PM	Germanium / 72 [#2]	29120	29123	100.0
092.D	cal1	7/7/2010 5:30:00 PM	Rhodium / 103 [#3]	4007000	4007074	100.0
092.D	cal1	7/7/2010 5:30:00 PM	Terbium / 159 [#3]	7341000	7341176	100.0
093.D	cal2	7/7/2010 5:34:00 PM	Germanium / 72 [#1]	94070	94655	100.6
093.D	cal2	7/7/2010 5:34:00 PM	Germanium / 72 [#2]	29120	28236	97.0
093.D	cal2	7/7/2010 5:34:00 PM	Rhodium / 103 [#3]	4007000	3972153	99.1
093.D	cal2	7/7/2010 5:34:00 PM	Terbium / 159 [#3]	7341000	7209418	98.2
094.D	cal3	7/7/2010 5:38:00 PM	Germanium / 72 [#1]	94070	92691	98.5
094.D	cal3	7/7/2010 5:38:00 PM	Germanium / 72 [#2]	29120	28327	97.3
094.D	cal3	7/7/2010 5:38:00 PM	Rhodium / 103 [#3]	4007000	4082632	101.9
094.D	cal3	7/7/2010 5:38:00 PM	Terbium / 159 [#3]	7341000	7551082	102.9
095.D	cal4	7/7/2010 5:42:00 PM	Germanium / 72 [#1]	94070	96816	102.9
095.D	cal4	7/7/2010 5:42:00 PM	Germanium / 72 [#2]	29120	30128	103.5
095.D	cal4	7/7/2010 5:42:00 PM	Rhodium / 103 [#3]	4007000	4194596	104.7
095.D	cal4	7/7/2010 5:42:00 PM	Terbium / 159 [#3]	7341000	7766642	105.8
096.D	cal5	7/7/2010 5:46:00 PM	Germanium / 72 [#1]	94070	98093	104.3
096.D	cal5	7/7/2010 5:46:00 PM	Germanium / 72 [#2]	29120	30217	103.8
096.D	cal5	7/7/2010 5:46:00 PM	Rhodium / 103 [#3]	4007000	4250174	106.1
096.D	cal5	7/7/2010 5:46:00 PM	Terbium / 159 [#3]	7341000	7860354	107.1
097.D	cal6	7/7/2010 5:50:00 PM	Germanium / 72 [#1]	94070	96649	102.7
097.D	cal6	7/7/2010 5:50:00 PM	Germanium / 72 [#2]	29120	29248	100.4
097.D	cal6	7/7/2010 5:50:00 PM	Rhodium / 103 [#3]	4007000	4163195	103.9
097.D	cal6	7/7/2010 5:50:00 PM	Terbium / 159 [#3]	7341000	7811223	106.4
098.D	Rinse	7/7/2010 5:53:00 PM	Germanium / 72 [#1]	94070	89609	95.3
098.D	Rinse	7/7/2010 5:53:00 PM	Germanium / 72 [#2]	29120	27617	94.8
098.D	Rinse	7/7/2010 5:53:00 PM	Rhodium / 103 [#3]	4007000	3963366	98.9
098.D	Rinse	7/7/2010 5:53:00 PM	Terbium / 159 [#3]	7341000	7332802	99.9

Acceptance Criteria: % R 59.5 - 125.4%

Internal Standards Relative Intensity Summary Form
1311/6020

SDG: PTF0829 **Sequence:** 070710.B

Instrument: 7500CE **Calibration:** 07/07/2010 Cal. 3

Reference Sample Analyzed: 7/7/2010 5:30:00 PM

File ID	Sample	Analyzed	Analyte	Reference Value	Result (Counts/Sec)	% R
099.D	ICV	7/7/2010 5:57:00 PM	Germanium / 72 [#1]	94070	94577	100.5
099.D	ICV	7/7/2010 5:57:00 PM	Germanium / 72 [#2]	29120	29128	100.0
099.D	ICV	7/7/2010 5:57:00 PM	Rhodium / 103 [#3]	4007000	4090259	102.1
099.D	ICV	7/7/2010 5:57:00 PM	Terbium / 159 [#3]	7341000	7536586	102.7
100.D	ICB	7/7/2010 6:01:00 PM	Germanium / 72 [#1]	94070	89198	94.8
100.D	ICB	7/7/2010 6:01:00 PM	Germanium / 72 [#2]	29120	27488	94.4
100.D	ICB	7/7/2010 6:01:00 PM	Rhodium / 103 [#3]	4007000	3966382	99.0
100.D	ICB	7/7/2010 6:01:00 PM	Terbium / 159 [#3]	7341000	7301434	99.5
101.D	ICSA	7/7/2010 6:05:00 PM	Germanium / 72 [#1]	94070	94036	100.0
101.D	ICSA	7/7/2010 6:05:00 PM	Germanium / 72 [#2]	29120	29032	99.7
101.D	ICSA	7/7/2010 6:05:00 PM	Rhodium / 103 [#3]	4007000	3944535	98.4
101.D	ICSA	7/7/2010 6:05:00 PM	Terbium / 159 [#3]	7341000	7665504	104.4
102.D	ICSAB	7/7/2010 6:09:00 PM	Germanium / 72 [#1]	94070	91029	96.8
102.D	ICSAB	7/7/2010 6:09:00 PM	Germanium / 72 [#2]	29120	28716	98.6
102.D	ICSAB	7/7/2010 6:09:00 PM	Rhodium / 103 [#3]	4007000	3992817	99.6
102.D	ICSAB	7/7/2010 6:09:00 PM	Terbium / 159 [#3]	7341000	7760601	105.7
103.D	10G0147-BLK1	7/7/2010 6:13:00 PM	Germanium / 72 [#1]	94070	89204	94.8
103.D	10G0147-BLK1	7/7/2010 6:13:00 PM	Germanium / 72 [#2]	29120	28371	97.4
103.D	10G0147-BLK1	7/7/2010 6:13:00 PM	Rhodium / 103 [#3]	4007000	4081350	101.9
103.D	10G0147-BLK1	7/7/2010 6:13:00 PM	Terbium / 159 [#3]	7341000	7505779	102.2
104.D	10G0147-BS1	7/7/2010 6:17:00 PM	Germanium / 72 [#1]	94070	95368	101.4
104.D	10G0147-BS1	7/7/2010 6:17:00 PM	Germanium / 72 [#2]	29120	30297	104.0
104.D	10G0147-BS1	7/7/2010 6:17:00 PM	Rhodium / 103 [#3]	4007000	4300944	107.3
104.D	10G0147-BS1	7/7/2010 6:17:00 PM	Terbium / 159 [#3]	7341000	7870060	107.2
106.D	PTF0823-01	7/7/2010 6:24:00 PM	Germanium / 72 [#1]	94070	97786	104.0
106.D	PTF0823-01	7/7/2010 6:24:00 PM	Germanium / 72 [#2]	29120	31343	107.6
106.D	PTF0823-01	7/7/2010 6:24:00 PM	Rhodium / 103 [#3]	4007000	4324608	107.9
106.D	PTF0823-01	7/7/2010 6:24:00 PM	Terbium / 159 [#3]	7341000	8379699	114.1
107.D	10G0147-SD1	7/7/2010 6:28:00 PM	Germanium / 72 [#1]	94070	99109	105.4
107.D	10G0147-SD1	7/7/2010 6:28:00 PM	Germanium / 72 [#2]	29120	32627	112.0
107.D	10G0147-SD1	7/7/2010 6:28:00 PM	Rhodium / 103 [#3]	4007000	4529057	113.0
107.D	10G0147-SD1	7/7/2010 6:28:00 PM	Terbium / 159 [#3]	7341000	8355492	113.8

Acceptance Criteria: % R 59.5 - 125.4%

Internal Standards Relative Intensity Summary Form
1311/6020

SDG: PTF0829 **Sequence:** 070710.B

Instrument: 7500CE **Calibration:** 07/07/2010 Cal. 3

Reference Sample Analyzed: 7/7/2010 5:30:00 PM

File ID	Sample	Analyzed	Analyte	Reference Value	Result (Counts/Sec)	% R
108.D	10G0147-MS1	7/7/2010 6:32:00 PM	Germanium / 72 [#1]	94070	97579	103.7
108.D	10G0147-MS1	7/7/2010 6:32:00 PM	Germanium / 72 [#2]	29120	31362	107.7
108.D	10G0147-MS1	7/7/2010 6:32:00 PM	Rhodium / 103 [#3]	4007000	4176029	104.2
108.D	10G0147-MS1	7/7/2010 6:32:00 PM	Terbium / 159 [#3]	7341000	8222443	112.0
109.D	PTF0829-33	7/7/2010 6:36:00 PM	Germanium / 72 [#1]	94070	98737	105.0
109.D	PTF0829-33	7/7/2010 6:36:00 PM	Germanium / 72 [#2]	29120	31882	109.5
109.D	PTF0829-33	7/7/2010 6:36:00 PM	Rhodium / 103 [#3]	4007000	4345922	108.5
109.D	PTF0829-33	7/7/2010 6:36:00 PM	Terbium / 159 [#3]	7341000	8025913	109.3
113.D	CCV	7/7/2010 6:52:00 PM	Germanium / 72 [#1]	94070	94701	100.7
113.D	CCV	7/7/2010 6:52:00 PM	Germanium / 72 [#2]	29120	29852	102.5
113.D	CCV	7/7/2010 6:52:00 PM	Rhodium / 103 [#3]	4007000	4169649	104.1
113.D	CCV	7/7/2010 6:52:00 PM	Terbium / 159 [#3]	7341000	7816563	106.5
114.D	CCB	7/7/2010 6:56:00 PM	Germanium / 72 [#1]	94070	87936	93.5
114.D	CCB	7/7/2010 6:56:00 PM	Germanium / 72 [#2]	29120	28504	97.9
114.D	CCB	7/7/2010 6:56:00 PM	Rhodium / 103 [#3]	4007000	4000042	99.8
114.D	CCB	7/7/2010 6:56:00 PM	Terbium / 159 [#3]	7341000	7419252	101.1

Acceptance Criteria: % R 59.5 - 125.4%

SCANNED 7/14/10 ADH

2501 - 2508

Done

Quality Control Approval Report

RUSH

Prep Sheet for metals digestions for ICPMS Totals by EPA Method 200.8 total / 3050 / 3020

Batch 10G0147 (Other wet)

TA #'s	PM's	DUE
PTF0822 Arctic Fox Environmental, Inc.	Vanessa Frahs	7/8/10
PTF0823 Arctic Fox Environmental, Inc.	Vanessa Frahs	7/8/10
PTF0829 GeoPro Geologic Services	Estella Rieben	7/13/10

Metals Batch# KB10-0059

Sample Integrity **Initial/Date** PJH 7/7/10

- X Special Instruction Checked
- X Sample ID's Checked / Correct
- X Sample hold times checked, (Cr+6 w-24hrs, s-28 days) Hg 28 days
- X Sample preservation checked
- X Digestion batch sheet fully completed
- X Batch Matrix matches Sample Matrix (If not, are percent solids required?)
- X All samples requested digested / analyzed

Instrument Performance **Initial/Date** 7/7/10 tnf

- ✓ Daily calibration and all acceptance criteria met

Data Analysis **Initial/Date** 7/7/10 tnf

- ✓ All reported results bracketed by valid CCV & CCB
- ✓ Method blank (MB) met acceptance criteria and project objectives
- ✓ LCS (BS) values within control limits and/or appropriately qualified
- ✓ DUP,MS1,MS2,MSD values w/in control limits and/or approp. qualified
- ✓ Comments, dilution factors noted correctly in data
- N/A NCR filled out

Final Report Form **Initial/Date** ADH 7/8/10

- ✓ MRL's correct for preparation and project objectives
- ✓ Special instructions checked
- ✓ QCAR complete

***** This Package contains all necessary copies for Data Deliverable Package **Initial/Date** ____________

Comments / Explanations:

070710 CE

TestAmerica, Portland
QCAR (metals\Metals.xls)

ICP/MS Metals

Preparation Logs

Form 4

PREPARATION BATCH SUMMARY

1311/6020

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Batch: 10G0147 Batch Matrix: Other wet Preparation: EPA 1311/3005

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Blank	10G0147-BLK1	103.D	07/06/10 22:55	
LCS	10G0147-BS1	104.D	07/06/10 22:55	
Matrix Spike	10G0147-MS1	108.D	07/06/10 22:55	
W-1	PTF0829-33	109.D	07/06/10 22:55	Level III DDP, added per client 6/29 ER

PREPARATION BENCH SHEET

TestAmerica Portland

BATCH: 10G0147

Matrix: Other wet

Prepared using: Metals - EPA 1311/3005
No Surrogate used

Lab Number	Client ID	Analysis	Sample pH <2	Initial (ml)	Final (ml)	Spike ID	Source ID	Spike (uL)	Due	Comments: Extraction (Log)
10G0147-BLK1	Blank	QC		5	50					
10G0147-BS1	LCS	QC		5	50	9090044		500		
10G0147-MS1	Matrix Spike	QC		5	50	9090044	PTF0823-01	500		
PTF0822-01	AF36565 Sample #1 Tank #1	Ag TCLP ICPMS 6020	✓	5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	Ag TCLP ICPMS 6020	✓	5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	As TCLP ICPMS 6020		5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	Ba TCLP ICPMS 6020		5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	Cd TCLP ICPMS 6020		5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	Cr TCLP ICPMS 6020		5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	Pb TCLP ICPMS 6020		5	50				07/08/10 16:00	
PTF0823-01	AF36564 ENV 3263	Se TCLP ICPMS 6020		5	50				07/08/10 16:00	
PTF0829-33	W-1	Ag TCLP ICPMS 6020	✓	5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTF0829-33	W-1	As TCLP ICPMS 6020		5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTF0829-33	W-1	Ba TCLP ICPMS 6020		5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTF0829-33	W-1	Cd TCLP ICPMS 6020		5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTF0829-33	W-1	Cr TCLP ICPMS 6020		5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTF0829-33	W-1	Pb TCLP ICPMS 6020		5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTF0829-33	W-1	Se TCLP ICPMS 6020		5	50				07/13/10 08:00	Level III DDP, added per client6/29 ER (Level III DDP, added per client 6/29 ER)
PTG0118-01		Pb	✓	5	50					

PJH 7/7/10 — Preparation By / Date

ADH 7/7/10 — Reviewed By / Date

Printed: 7/6/2010 10:58:09PM

Reagent/Description/Expires Date

PT01282	Hydrochloric Acid - AR Select Lot # H42A18	11/4/2010	
PT01890	Nitric Acid - AR Select ACS 2.5L Lot # J10024	12/28/2010	

Batch Comments: KB10-0059

Temp of Joe: 96°C
C Tubes: 1001171

Pipettes:
S/N 4957516 500-5000uL
S/N 2062016 100-1000uL

Printed: 7/6/2010 10:58:09PM

Preparation By	Date	Reviewed By	Date

CVAA Metals

Target Analyte Results Summaries

Form 1

INORGANIC ANALYSIS DATA SHEET

1311/7470A

W-1

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Water Laboratory ID: PTF0829-33 File ID: W070710A1_7470A-028

Sampled: 06/27/10 13:47 Prepared: 07/07/10 15:44 Analyzed: 07/07/10 17:34

Solids: 0.00 Preparation: EPA 1311/7470A Initial/Final: 0.1 ml / 40 ml

Batch: 10G0180 Sequence: T002119 Calibration: P10G015 Instrument: CVAA

CAS NO.	Analyte	Concentration (mg/l)	Dilution Factor	Q	Method
7439-97-6	Mercury	0.0800	1	U	1311/7470A

CVAA Metals

Quality Control Summaries

Form 1
METHOD BLANK DATA SHEET
1311/7470A

Laboratory:	TestAmerica Portland			SDG:	PTF0829
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study
Matrix:	Other wet	Laboratory ID:	10G0180-BLK1	File ID:	W070710A1_7470A-019
Prepared:	07/07/10 15:44	Preparation:	EPA 1311/7470A	Initial/Final:	40 ml / 40 ml
Analyzed:	07/07/10 17:11	Instrument:	CVAA		
Batch:	10G0180	Sequence:	T002119	Calibration:	P10G015

CAS NO.	COMPOUND	CONC. (mg/l)	Q
7439-97-6	Mercury	0.000200	U

Laboratory Blanks Report
1311/7470A

SDG: PTF0829

Batch: **10G0180** **Matrix:** **Other wet**

Blank: 10G0180-BLK1

Associated Samples

Laboratory ID:	Sample:	Analyzed:	Instrument:	File ID:
10G0180-BLK1	Blank	7/7/2010 5:11:50 PM	CVAA	W070710A1_7470A_019
10G0180-BS1	LCS	7/7/2010 5:14:19 PM	CVAA	W070710A1_7470A_020
10G0180-BSD1	LCS Dup	7/7/2010 5:17:07 PM	CVAA	W070710A1_7470A_021
10G0180-MS1	Matrix Spike	7/7/2010 5:19:52 PM	CVAA	W070710A1_7470A_022
10G0180-MS2	Matrix Spike	7/7/2010 5:22:21 PM	CVAA	W070710A1_7470A_023
10G0180-DUP1	Duplicate	7/7/2010 5:24:54 PM	CVAA	W070710A1_7470A_024
10G0180-DUP2	Duplicate	7/7/2010 5:27:23 PM	CVAA	W070710A1_7470A_025
PTF0829-33	W-1	7/7/2010 5:34:50 PM	CVAA	W070710A1_7470A_028

Form 3

LCS / LCS DUPLICATE RECOVERY

1311/7470A

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other wet Spike standard: PT01439

Batch: 10G0180 Laboratory ID: 10G0180-BS1

Preparation: EPA 1311/7470A Initial/Final: 40 ml / 40 ml

COMPOUND	SPIKE ADDED (mg/l)	LCS CONCENTRATION (mg/l)	LCS % REC. #	QC LIMITS REC.
Mercury	0.00500	0.00498	99.7	85 - 115

COMPOUND	SPIKE ADDED (mg/l)	LCSD CONCENTRATION (mg/l)	LCSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Mercury	0.00500	0.00496	99.3	0.428	20	85 - 115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Duplicate

DUPLICATES
1311/7470A

Laboratory: TestAmerica Portland
Client: GeoPro Geologic Services
Matrix: Other wet
Batch: 10G0180
Preparation: EPA 1311/7470A
Source Sample Name: Duplicate

SDG: PTF0829
Project: Calbag PCB Surface Washing Pilot Stu
Laboratory ID: 10G0180-DUP1
Lab Source ID: PTF0794-06
Initial/Final: 0.1 ml / 40 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/l)	C	DUPLICATE CONCENTRATION (mg/l)	C	RPD %	Q	METHOD
Mercury	20	ND		ND				1311/7470A

* Values outside of QC limits

DUPLICATES
1311/7470A

W-1

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Stu

Matrix: Other wet

Laboratory ID: 10G0180-DUP2

Batch: 10G0180

Lab Source ID: PTF0829-33

Preparation: EPA 1311/7470A

Initial/Final: 0.1 ml / 40 ml

Source Sample Name: W-1

% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/l)	C	DUPLICATE CONCENTRATION (mg/l)	C	RPD %	Q	METHOD
Mercury	20	ND		ND				1311/7470A

* Values outside of QC limits

Form 3

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

1311/7470A

Matrix Spike

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other wet

Spike standard: PT01439

Batch: 10G0180

Laboratory ID: 10G0180-MS1

Preparation: EPA 1311/7470A

Initial/Final: 0.1 ml / 40 ml

Source Sample Name: Matrix Spike

COMPOUND	SPIKE ADDED (mg/l)	SAMPLE CONCENTRATION (mg/l)	MS CONCENTRATION (mg/l)	MS % REC. #	QC LIMITS REC.
Mercury	2.00	ND	1.95	97.7	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Form 3

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

1311/7470A

W-1

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Study

Matrix: Other wet

Spike standard: PT01439

Batch: 10G0180

Laboratory ID: 10G0180-MS2

Preparation: EPA 1311/7470A

Initial/Final: 0.1 ml / 40 ml

Source Sample Name: W-1

COMPOUND	SPIKE ADDED (mg/l)	SAMPLE CONCENTRATION (mg/l)	MS CONCENTRATION (mg/l)	MS % REC. #	QC LIMITS REC.
Mercury	2.00	ND	1.90	94.8	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

INITIAL AND CONTINUING CALIBRATION CHECK

1311/7470A

Laboratory: TestAmerica Portland

Client: GeoPro Geologic Services

Instrument ID: CVAA

Control Limt: +/- 20.00%

SDG: PTF0829

Project: Calbag PCB Surface Washing Pilot Study

Calibration: P10G015

Sequence: T002119

Lab Sample ID	Analyte	True	Found	%R	Limit	Units	Method	Analyzed
T002119-ICV1	Mercury	5.05	4.97	98.3	90 - 110	ug/l	1311/7470A	7/7/10 16:40
T002119-CCV2	Mercury	5.00	5.14	103	80 - 120	ug/l	1311/7470A	7/7/10 17:06
T002119-CCV3	Mercury	5.00	5.02	100	80 - 120	ug/l	1311/7470A	7/7/10 17:37

* Values outside of QC limits

BLANKS
1311/7470A

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services

Instrument ID: CVAA Project: Calbag PCB Surface Washing Pilot Study

Sequence: T002119 Calibration: P10G015

Lab Sample ID	Analyte	Found	MRL	Units	C	Method	Analyzed
T002119-ICB1	Mercury	-0.0556	0.200	ug/l		1311/7470A	7/7/10 16:42
T002119-CCB2	Mercury	-0.0764	0.200	ug/l		1311/7470A	7/7/10 17:09
10G0180-BLK1	Mercury	ND	0.000200	mg/l		1311/7470A	7/7/10 17:11
T002119-CCB3	Mercury	-0.0442	0.200	ug/l		1311/7470A	7/7/10 17:40

METHOD DETECTION AND REPORTING LIMITS
1311/7470A

Laboratory: TestAmerica Portland **SDG:** PTF0829

Client: GeoPro Geologic Services **Project:** Calbag PCB Surface Washing Pilot Stu

Matrix: Other wet **Instrument:** CVAA

Analyte	MDL	MRL	Units
Mercury	0.0000590	0.000200	mg/l

Form 5

ANALYSIS BATCH (SEQUENCE) SUMMARY

1311/7470A

Laboratory: TestAmerica Portland
SDG: PTF0829
Client: GeoPro Geologic Services
Project: Calbag PCB Surface Washing Pilot Study
Sequence: T002119
Instrument: CVAA
Calibration: P10G015

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	T002119-CAL1	W070710A1_7470A-001	07/07/10 16:24
Cal Standard	T002119-CAL2	W070710A1_7470A-002	07/07/10 16:27
Cal Standard	T002119-CAL3	W070710A1_7470A-003	07/07/10 16:29
Cal Standard	T002119-CAL4	W070710A1_7470A-004	07/07/10 16:32
Cal Standard	T002119-CAL5	W070710A1_7470A-005	07/07/10 16:34
Cal Standard	T002119-CAL6	W070710A1_7470A-006	07/07/10 16:37
Initial Cal Check	T002119-ICV1	W070710A1_7470A-007	07/07/10 16:40
Initial Cal Blank	T002119-ICB1	W070710A1_7470A-008	07/07/10 16:42
Calibration Check	T002119-CCV2	W070710A1_7470A-017	07/07/10 17:06
Calibration Blank	T002119-CCB2	W070710A1_7470A-018	07/07/10 17:09
Blank	10G0180-BLK1	W070710A1_7470A-019	07/07/10 17:11
LCS	10G0180-BS1	W070710A1_7470A-020	07/07/10 17:14
LCS Dup	10G0180-BSD1	W070710A1_7470A-021	07/07/10 17:17
Matrix Spike	10G0180-MS1	W070710A1_7470A-022	07/07/10 17:19
W-1	10G0180-MS2	W070710A1_7470A-023	07/07/10 17:22
Duplicate	10G0180-DUP1	W070710A1_7470A-024	07/07/10 17:24
W-1	10G0180-DUP2	W070710A1_7470A-025	07/07/10 17:27
W-1	PTF0829-33	W070710A1_7470A-028	07/07/10 17:34
Calibration Check	T002119-CCV3	W070710A1_7470A-029	07/07/10 17:37
Calibration Blank	T002119-CCB3	W070710A1_7470A-030	07/07/10 17:40

Analysis Sequence Report C:\Program Files\Millennium\Sequences\W070710A1_7470A.sqf

General Details

Instrument Type	Millennium Merlin
AutoSampler Type	20.200
Tray Type	Tray02

Analyses for current Session

Line #	*Pos*	*Runs*	*Type*	*Name / Conc*	*ID / Action*	*Mass(g) / Min*	*Vol(ml) / Max*	*Mass 2*	*Vol 2*	*Dil Factor*
1	1	1	Cal	0	New Cal					
2	3	1	Cal	0.2						
3	5	1	Cal	0.5						
4	7	1	Cal	1						
5	1	1	Cal	5						
6	3	1	Cal	10						
7	1	1	QC	T002119-ICV1	Abort	4.5	5.5			
8	7	1	QC	T002119-ICB1	Ignore	0	0.2			
9	5	1	QC	T002119-CCV1	Abort	4	6			
10	7	1	QC	T002119-CCB1	Ignore	0	0.2			
11	9	1	Sample	10G0179-BLK1		1.00	1.00			1
12	11	1	Sample	10G0179-BS1		1.00	1.00			1
13	13	1	Sample	10G0179-BSD1		1.00	1.00			1
14	15	1	Sample	10G0179-MS1		1.00	1.00			1
15	17	1	Sample	10G0179-MSD1		1.00	1.00			1
16	19	1	Sample	PTG0050-01		1.00	1.00			1
17	5	1	QC	T002119-CCV2	Abort	4	6			
18	7	1	QC	T002119-CCB2	Ignore	0	0.2			
19	21	1	Sample	10G0180-BLK1		1.00	1.00			1
20	23	1	Sample	10G0180-BS1		1.00	1.00			1
21	25	1	Sample	10G0180-BSD1		1.00	1.00			1
22	27	1	Sample	10G0180-MS1		1.00	1.00			1
23	29	1	Sample	10G0180-MS2		1.00	1.00			1
24	31	1	Sample	10G0180-DUP1		1.00	1.00			1
25	33	1	Sample	10G0180-DUP2		1.00	1.00			1
26	35	1	Sample	PTF0794-06		1.00	1.00			1
27	37	1	Sample	PTF0823-01		1.00	1.00			1
28	39	1	Sample	PTF0829-33		1.00	1.00			1

Printed: 7/8/2010 8:33:52 AM Generated by: ___XS___ Signature: [signature]

Analysis Sequence Report C:\Program Files\Millennium\Sequences\W070710A1_7470A.sqf

Line	#Pos	Runs	Type	Name / Conc	ID / Action	Mass(g) / Min	Vol(ml) / Max	Mass 2	Vol 2	Dil Factor
29	5	1	QC	T002119-CCV3	Abort	4	6			
30	7	1	QC	T002119-CCB3	Ignore	0	0.2			
31	41	1	Sample	PTF0878-01		1.00	1.00			1
32	43	1	Sample	PTF0878-02		1.00	1.00			1
33	45	1	Sample	PTF0878-03		1.00	1.00			1
34	5	1	QC	T002119-CCV4	Abort	4	6			
35	7	1	QC	T002119-CCB4	Ignore	0	0.2			

Quality Control Approval Report

MERCURY

CVAA 30335 7470A

Batch 10G0180 (Other wet)

WO #s	PM's	DUE
PTF0794 Bonneville Power Administration-Vancouver	Darrell Auvil	7/12/10
PTF0823 Arctic Fox Environmental, Inc.	Vanessa Frahs	7/8/10
PTF0829 GeoPro Geologic Services	Estella Rieben	7/13/10
PTF0878 Intel Corporation-Hillsboro	Brian Cone	7/14/10

Metals Batch# 10G0180

Sample Integrity **Initial/Date** JCS 7/8/10

✓ Special Instruction Checked

✓ Sample ID's Checked / Correct

✓ Sample hold times checked, Hg 28 days

✓ Sample preservation checked

✓ Digestion batch sheet fully completed

✓ Batch Matrix matches Sample Matrix (If not, are percent solids required?)

✓ All samples requested digested / analyzed

Instrument Performance **Initial/Date** JCS 7/8/10

✓ Daily calibration and all acceptance criteria met

Data Analysis **Initial/Date** JCS 7/8/10

✓ All reported results bracketed by valid CCV & CCB

✓ Method blank (MB) met acceptance criteria and project objectives

✓ LCS (BS) values within control limits and/or appropriately qualified

✓ DUP,MS1,MS2,MSD values w/in control limits and/or approp. qualified

✓ Comments, dilution factors noted correctly in data

___ NCR filled out

Final Report Form **Initial/Date** ADH 7/8/10

✓ MRL's correct for preparation and project objectives

✓ Special instructions checked

✓ QCAR complete

***** This Package contains all necessary copies for Data Deliverable Package **Initial/Date** ________

Comments / Explanations:

Quality Control Approval Report

MERCURY

CVAA 30335 7470A

Batch 10G0180 (Other wet)

WO #s	PM's	DUE
PTF0794	Darrell Auvil Bonneville Power Administration-Vancouver	7/12/10
PTF0823	Vanessa Frahs Arctic Fox Environmental, Inc.	7/8/10
PTF0829	Estella Rieben GeoPro Geologic Services	7/13/10
PTF0878	Brian Cone Intel Corporation-Hillsboro	7/14/10

Metals Batch# 10G0180

Sample Integrity **Initial/Date** JCS 7/8/10

✓ Special Instruction Checked

✓ Sample ID's Checked / Correct

✓ Sample hold times checked, Hg 28 days

✓ Sample preservation checked

✓ Digestion batch sheet fully completed

✓ Batch Matrix matches Sample Matrix (If not, are percent solids required?)

✓ All samples requested digested / analyzed

Instrument Performance **Initial/Date** JCS 7/8/10

✓ Daily calibration and all acceptance criteria met

Data Analysis **Initial/Date** JCS 7/8/10

✓ All reported results bracketed by valid CCV & CCB

✓ Method blank (MB) met acceptance criteria and project objectives

✓ LCS (BS) values within control limits and/or appropriately qualified

✓ DUP,MS1,MS2,MSD values w/in control limits and/or approp. qualified

✓ Comments, dilution factors noted correctly in data

___ NCR filled out

Final Report Form **Initial/Date** ADH 7/8/10

✓ MRL's correct for preparation and project objectives

✓ Special instructions checked

✓ QCAR complete

***** This Package contains all necessary copies for Data Deliverable Package **Initial/Date** ____________

Comments / Explanations:

CVAA Metals

Preparation Logs

Form 4
PREPARATION BATCH SUMMARY
1311/7470A

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Batch: 10G0180 Batch Matrix: Other wet Preparation: EPA 1311/7470A

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Blank	10G0180-BLK1	/070710A1_7470A-01	07/07/10 15:44	
LCS	10G0180-BS1	/070710A1_7470A-02	07/07/10 15:44	
LCS Dup	10G0180-BSD1	/070710A1_7470A-02	07/07/10 15:44	
Duplicate	10G0180-DUP1	/070710A1_7470A-02	07/07/10 15:44	
W-1	10G0180-DUP2	/070710A1_7470A-02	07/07/10 15:44	
Matrix Spike	10G0180-MS1	/070710A1_7470A-02	07/07/10 15:44	
W-1	10G0180-MS2	/070710A1_7470A-02	07/07/10 15:44	
W-1	PTF0829-33	/070710A1_7470A-02	07/07/10 15:44	consumes KMnO4

PREPARATION BENCH SHEET

TestAmerica Portland

BATCH: 10G0180

Matrix: Other wet

Prepared using: Metals - EPA 1311/7470A
No Surrogate used

Lab Number	Client ID	Analysis	Prepared	Initial (ml)	Final (ml)	Spike ID	Source ID	Spike (uL)	pH	Comments: Extraction (Log)
10G0180-BLK1	Blank	QC	07/07/10 15:44	40	40					
10G0180-BS1	LCS	QC	07/07/10 15:44	40	40	PT01439		2000		
10G0180-BSD1	LCS Dup	QC	07/07/10 15:44	40	40	PT01439		2000		
10G0180-DUP1	Duplicate	QC	07/07/10 15:44	0.1	40		PTF0794-06			
10G0180-DUP2	Duplicate	QC	07/07/10 15:44	0.1	40		PTF0829-33			
10G0180-MS1	Matrix Spike	QC	07/07/10 15:44	0.1	40	PT01439	PTF0794-06	2000	>6	
10G0180-MS2	Matrix Spike	QC	07/07/10 15:44	0.1	40	PT01439	PTF0829-33	2000	>6	
PTF0794-06	67566 H11308	Hg TCLP CVAA 7470A	07/07/10 15:44	0.1	40				<2	consumes KMnO4
P[illegible]823-01	AF36564 ENV 3263	Hg TCLP CVAA 7470A	07/07/10 15:44	0.1	40				<2	consumes KMnO4
PTF0829-33	W-1	Hg TCLP CVAA 7470A	07/07/10 15:44	0.1	40				<2	consumes KMnO4 (Level III DDP, added per client 6/29 ER)
PTF0878-01	D1D SOG WASTE	Hg TCLP CVAA 7470A	07/07/10 15:44	0.1	40				<2	consumes KMnO4 (limited volume; contains solvents)
PTF0878-02	D1D CSW WASTE	Hg TCLP CVAA 7470A	07/07/10 15:44	0.1	40				<2	consumes KMnO4 (limited volume; contains solvents)
PTF0878-03	D1D GSW WASTE	Hg TCLP CVAA 7470A	07/07/10 15:44	0.1	40				<2	consumes KMnO4 (limited volume; contains solvents)

Reagent/Description/Expires Date

PT01489	Centrifuge Tubes (EnvXprs) Lot 1001171	11/16/2010	PT01569	12% (m/v) Hydroxylamine Hydrochloride NaCl	11/23/2010
PT01844	Sulfuric Acid Certified ACS Plus	12/18/2010	PT01890	Nitric Acid - AR Select ACS 2.5L Lot # J10024	12/28/2010
PT01901	Potassium Persulfate	12/29/2010	PT01902	Potassium Permanganate	12/29/2010
PT01946	2% Stannous Chloride CVAA	12/31/2010	PT01948	CVAA Blank Solution	12/31/2010

Batch Comments: Hg Water Bath
IN 93.6C
0[illegible]/10
Thermometer Hg-Wb

John Swanson 7/7/10
Prepared By Date

AH
Reviewed By Date

Printed: 7/7/2010 3:48:44PM

General Chemistry

ANALYSES DATA PACKAGE COVER PAGE

SM 4500-H B

Laboratory:	TestAmerica Portland	SDG:	PTF0829
Client:	GeoPro Geologic Services	Project:	Calbag PCB Surface Washing Pilot Study

Client Sample Id:	Lab Sample Id:
W-1	PTF0829-33

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

General Chemistry

Target Analyte Results Summaries

Form 1

INORGANIC ANALYSIS DATA SHEET

SM 4500-H B

W-1

Laboratory:	TestAmerica Portland			SDG:	PTF0829		
Client:	GeoPro Geologic Services			Project:	Calbag PCB Surface Washing Pilot Study		
Matrix:	Water	Laboratory ID:	PTF0829-33	File ID:			
Sampled:	06/27/10 13:47	Prepared:	06/29/10 11:33	Analyzed:	06/29/10 11:45		
Solids:	0.00	Preparation:	General Preparation	Initial/Final:	1 ml / 1 ml		
Batch:	10F0919	Sequence:		Calibration:		Instrument:	Inst

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
PH	pH	10.9	1		SM 4500-H B

THE LEADER IN ENVIRONMENTAL TESTING

General Chemistry

Quality Control Summaries

9405 SW Nimbus Avenue Beaverton, OR 97008 **tel** 503.906.9200 **fax** 503.906.9210 **www.testamericainc.com**

Duplicate

DUPLICATES
SM 4500-H B

Laboratory: TestAmerica Portland

SDG: PTF0829

Client: GeoPro Geologic Services

Project: Calbag PCB Surface Washing Pilot Stu

Matrix: Water

Laboratory ID: 10F0919-DUP1

Batch: 10F0919

Lab Source ID: PTF0846-01

Preparation: General Preparation

Initial/Final: 1 ml / 1 ml

Source Sample Name: Duplicate

% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (pH Units)	C	DUPLICATE CONCENTRATION (pH Units)	C	RPD %	Q	METHOD
pH	25	5.62		5.63		0.178		SM 4500-H B

* Values outside of QC limits

CONTINUING CALIBRATION SUMMARY

SM 4500-H B

SDG: PTF0829
Instrument: pH Meter
Batch: 10F0919

Analysis Date: 6/29/2010
Units: pH Units

Date/Time Analyzed	ICV @ 8 06/29/10 11:45 AM		
Analyte	True Value	Found	Diff
pH	8	7.96	-0.04

Date/Time Analyzed	7 Buffer 06/29/10 11:45 AM		
Analyte	True Value	Found	Diff
pH	7	7.02	0.02

Acceptance Criteria: ± 0.05 Meter Points

Prepared by: CMW 7/12/10
Reviewed by: DGM 07/13/2010

Quality Control Approval Report

Test America Inc.
Portland

pH per EPA 150.1/9040B/9045C/SM 4500-H B

BATCH # 10F0919

TA #'s PTF0829, PTF0846, PTF0869

PM's ER BC VF

DUE 7-13-10 8am → 6-30-10 16:00

SAMPLE INTEGRITY

Initial / Date CC 6-30-10

✓ Sample ID's checked
✓ Sample hold times checked
✓ Sample preservation checked

SAMPLE ANALYSIS

Initial / Date

✓ Temperature recorded
✓ If Solid matrix, grams/mls recorded

DATA ANALYSIS

Initial / Date

✓ Duplicate RPD within control limits
✓ Results within range and bracketed by buffers
✓ Buffers & ICVs within 0.05 pH points
✓ Slope efficiency acceptable 100+/-5%

FINAL REPORT FORM

Initial / Date CV 06/30/10

✓ Sample ID's correct on final report
✓ Proper units / significant figures
✓ Prep/analysis dates included
✓ *Slope efficiency, buffers, and ICV within acceptable limits*
✓ QC reports completed and included

Explain any deviations:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

General Chemistry

Preparation Logs

Form 4

PREPARATION BATCH SUMMARY

SM 4500-H B

Laboratory: TestAmerica Portland SDG: PTF0829

Client: GeoPro Geologic Services Project: Calbag PCB Surface Washing Pilot Study

Batch: 10F0919 Batch Matrix: Water Preparation: General Preparation

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Duplicate	10F0919-DUP1		06/29/10 11:33	
W-1	PTF0829-33		06/29/10 11:33	added per client 6/29 ER, okay to do out of hold,

PREPARATION BENCH SHEET

TestAmerica Portland

BATCH: 10F0919

Matrix: Water

Prepared using: Wet Chem - General Preparation
No Surrogate used

Lab Number	Client ID	Analysis	pH	Initial (ml)	Final (ml)	Spike ID	Source ID	Spike (uL)	Due	Comments: Extraction (Log)
10F0919-DUP1	Duplicate	QC		1	1		PTF0846-01			
PTF0829-33	W-1	pH- SM 4500-H B		1	1				07/13/10 08:00	added per client 6/29 ER, okay to do out of hold, (Level III DDP, added per client6/29 ER, okay to do out of hold, use out of 1L amber)
PTF0846-01	Wastewater	pH- SM 4500-H B		1	1					Added for BatchQC in: 10F0919 (BatchQC)
PTF0846-01	Wastewater	pH-150.1/9040A		1	1				07/13/10 08:00	
PTF0869-03	WW3	pH- SM 4500-H B		1	1				06/30/10 16:00	

Reagent/Description/Expires Date

Batch Comments: None

Appendix J

Focused Feasibility Study Report

2495 NW Nicolai Street, April, 2011

FOCUSED FEASIBILITY STUDY

CALBAG METALS CO. FACILITY
2495 NW NICOLAI STREET
PORTLAND, OREGON

Prepared for

Oregon Department of Environmental Quality

Northwest Region

2020 SW 4th Avenue

Portland, Oregon 97201

by

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Battle Ground, Washington 98604
(360) 666-1465
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April 2011

Revision 1

Contents

Tables

Figures

1 INTRODUCTION

1.1 Purpose

This Focused Feasibility Study (FFS) report is prepared for property located at 2495 NW Nicolai Street, Portland, Oregon (Site). A site investigation was conducted to evaluate potential presence of site contaminants in soil and groundwater beneath the site. In addition, a stormwater Source Control Evaluation (SCE) was required for this Site because of its proximity and connection via the stormwater pathway to the Portland Harbor Superfund Site, and the potential for the Site to be a source of Polychlorinated Biphenyls (PCBs) to the Willamette River. The results of the SCE indicate that PCBs are present in catch basins and on asphalt and concrete surfaces in limited areas of the site and have the potential to leave the site via the stormwater pathway.

The purpose of the FFS is to present results of the site investigation and SCE, and to evaluate remedial measures including appropriate source control measures. The FFS evaluates source control measures to address the overall stormwater management system and asphalt paved driveways and building interior concrete floors that were identified as PCB-affected by the source control investigation.

The remedial technologies and alternatives that are evaluated in this FFS were developed in consultation with the Oregon Department of Environmental Quality (DEQ). Remedial alternatives are evaluated pursuant to criteria specified in OAR 340-122-0085 and 0090 and a recommended remedial alternative is presented for DEQ consideration. The project goal is to implement necessary source control measures and ultimately obtain a No Further Action determination from DEQ for the site.

1.2 Scope of FFS

The work performed to support completion of this FFS included the following elements.

- Develop focused remedial alternatives in consultation with DEQ.
- Design and conduct a pilot study to evaluate effectiveness of asphalt and concrete washing technologies and to generate remedial alternative cost data.
- Evaluate pilot study effectiveness.
- Evaluate a range of remedial alternatives that include source control measures and present a recommended alternative.

The FFS addresses exposed PCB-affected surfaces, including pavement and concrete floors, identified by the source control evaluation. Site soil and groundwater were also investigated as part of an overall site investigation and results are discussed in the following summary of site characterization section.

2 SUMMARY OF SITE CHARACTERIZATION

The following subsections present a summary of site background information and investigation data collected during the stormwater source control evaluation and overall site investigation. Several investigative phases were conducted including onsite catch basin sediment sampling (May 2009), cleaning onsite catch basins (July 2009), roof sediment sampling for PCBs (July 2009), asphalt and soil sampling for PCBs (October 2009), and concrete and asphalt sampling for PCBs (December 2009). A report titled "Environmental Site Assessment" (May 2009) summarized soil and groundwater sampling. Reports prepared for these investigations are listed in section 7 References.

2.1 Site Description

The Site consists of 1.68 acres of developed land and 0.23 acres of undeveloped land located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1). The developed portion of the site is paved and contains several buildings including a corporate office building, a general storage building, an open shed with a flat metal roof, and a processing warehouse. The warehouse is a flat-roofed wood and steel-framed building with concrete exterior walls and a concrete foundation that covers 67,281 square feet. The site is accessed from the south via entrances from NW Nicolai Street and from the west via an entrance from NW 25th Place.

The Site is located within the Portland Basin and is underlain at depth by Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods. More recent Quaternary alluvium deposited by the Willamette River, consisting of silt, sand and organic-rich clay, overlies the Pleistocene sediments and separates the geologic materials underlying the Site from the Willamette River. Man-made fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill-ends were deposited on an original ground surface to the north of the Site at the Guilds Lake Remediation Project. The topography of the Site is relatively flat.

The nearest surface water to the Site is the Willamette River, located approximately ½ mile to the northeast. No surface water is present on the site. Stormwater runoff is captured by the onsite stormwater collection system and most stormwater flows through a treatment system prior to discharge, with a small portion of untreated stormwater discharged to the City stormwater system that goes to the City's treatment plant or flows overland from the south part of the Site to NW Nicolai Street. Stormwater management is discussed in further detail in Section 2.4.

2.2 Facility Operation

The Site is owned by 2495 Nicolai LLC and operated by Calbag Metals Company ("Calbag"). Calbag operates a nonferrous scrap metal recycling business at the Site which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals generally consist of aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items that may contain contaminants such as mercury or PCBs. Fabrication does not occur at the Site.

The primary outdoor activity at the Site is delivery of scrap metals by truck or customer private vehicles, and unloading and loading of the scrap metal. Most of the scrap metal is located inside the onsite warehouse building. Outdoor storage is generally limited to full and empty hoppers, uncovered storage piles separated by concrete block walls, empty steel drop-boxes, some baled metals, and trucks.

Management practices at the Site include sweeping and catch basin cleanout. The back lot is swept daily with a power sweeper if weather conditions permit. Loading docks are swept manually every day. Catch basins are regularly inspected and cleaned quarterly.

2.3 Land Use and Beneficial Water Use

The site is zoned heavy industrial (IH) (Phase I ESA, August 29, 2008) and is expected to remain as heavy industrial into the foreseeable future. The site is located in an area of northwest Portland surrounded by heavy industry as past and current land use. This area is also within the Guild's Lake Industrial Sanctuary Plan District, formalized through adoption of Ordinance No. 176092 by the Portland City Council on December 21, 2001. An industrial sanctuary preserves land for long-term industrial use.

No current or likely future beneficial use of groundwater beneath the Site has been identified. The facility uses City of Portland water for all its onsite water use. Groundwater from beneath the Site flows northward toward the Willamette River and likely discharges to the river at some distance downgradient from the Site.

2.4 Stormwater Management System

Site stormwater is discharged under a National Pollutant Discharge Elimination System (NPDES) permit (#1200-Z) issued by DEQ and current until June 30, 2012. The current ground surface at the Site slopes gradually to the northeast and stormwater is managed by a series of catch basins that collect stormwater and direct the stormwater to a treatment system prior to discharge to the City of Portland stormwater system with eventual discharge to the Willamette River. The back lot northern portion of the site (see Figure 1) eventually drains to the City of Portland outfall #16, and the front lot drains via catch basin CB-5 to outfall #15 which is diverted to the City's wastewater treatment plant.

2.4.1 Collection and Treatment of Stormwater

Stormwater at the facility is managed in three runoff basins, separated by relatively flat, indistinct drainage divides, referred to as the north, east, and west drainage basins (Figure 2). The north drainage basin includes the unpaved areas to the north of the warehouse building. Stormwater collecting in the north basin drains to one of two catch basins, CB-1 and CB-2, where it is pumped to an above-ground enhanced filtration (StormwateRx) treatment system for the removal of total suspended solids and metals. Treated stormwater is discharged to the City of Portland's stormwater system, which discharges into the Willamette River under a NPDES discharge permit.

The west drainage basin includes the northwest portion of the warehouse building roof, the NW 25th Avenue alley, and the paved materials handling area on the west end of the facility. Stormwater in the west basin drains to one of three catch basins, CB-3, CB-4, and CB-5. Stormwater that collects in CB-3, CB-4, and CB-5 discharges by gravity flow to the City's combined sanitary/stormwater sewer overflow (CSO) system. Stormwater in CB-3 and CB-4 is routed through an oil/water separator before being discharged to the CSO along NW 25th Place. CB-5 also discharges to the CSO along NW 25th Place, but without any pretreatment. The line connecting CB-5 to the sanitary sewer is old and deteriorated, and in need of repair or replacement.

The east basin includes the northeast, southeast, and southwest portions of the warehouse building roof, and the paved parking and truck unloading/loading area to the east of the warehouse. Stormwater in the east basin drains to catch basin CB-6 or sheet flows to NW Nicolai Street. Stormwater collecting in CB-6 discharges to a sanitary sewer along NW Nicolai Street, also without any pretreatment.

2.5 Soil and Groundwater Investigation

The soil and groundwater investigation was intended to carry out an upland source control evaluation on a voluntary basis and to evaluate occupational worker exposure to soil. Data collected were tabulated and compared to DEQ's JSCS SLVs. The results of the investigation are presented in the May 2009 Environmental Site Investigation Report. Data were also compared to DEQ's Risk Based Concentrations (RBCs) for occupational exposure to soil. No beneficial use has been identified for onsite groundwater; therefore, a comparison to human health RBCs for groundwater was not made. Results of groundwater sampling were compared to JSCS SLVs for potential discharge to surface water.

DEQ has identified SLVs that are preferred for use in screening soil, catch basin sediment, storm water and groundwater for initial upland source control evaluations. The DEQ identified SLVs are a combination of federal minimum contaminant levels (MCLs) appropriately used for drinking water supplies, EPA tap water preliminary remediation goals (PRGs) used for evaluating the residential drinking water pathway, various ambient water quality criteria for ecological receptors, and ecological-based sediment quality and bioaccumulative criteria. As such, these DEQ-preferred screening SLVs are very conservative and not necessarily applicable to each site and its specific conditions. The screening levels are simply a means of evaluating the possible threat to the surface water environment and associated receptors, should the soil and groundwater actually migrate into the site storm water system and be distributed into a surface water body, or for groundwater to migrate and discharge into a surface water body at concentrations that exceed the SLVs. Screening using the SLVs does not account for attenuation, degradation or any other controls that may exist, such as, foundation slabs or area paving.

2.5.1 Results of Soil Sampling

Some chemicals were not detected at Practical Quantitation Limits (PQLs) that exceed SLVs for soil or water. For metals in soil, arsenic, mercury and selenium were not detected at PQLs that were 2 to 4 times their soil SLVs. Chlordane, DDD/DDE/DDT and dieldren have been identified as bioaccumulative chemicals, and their PQLs were 1 to 3 orders of magnitude higher than their SLVs. Achieving lower PQLs would significantly increase the cost of analysis. Pesticides are not identified as chemicals known to be used on site.

Only cadmium, lead and mercury were detected in soil at concentrations that exceed their SLVs, near MW-1, MW-3, B4 and B3 (see Table 4, Site Investigation Report, May 2009). Some PAHs were detected at concentrations that exceed their SLVs in boring B4. Sample locations B3 and B4 are beneath the existing building floor slab and are therefore not accessible to erosion or runoff into the site storm drain system.

Metals in soil did not exceed their RBCs for occupational exposure, except for arsenic which was not detected at PQLs of 10 times its RBC. Aroclors were not detected at concentrations that exceed their RBCs. PAHs were not detected at concentrations that exceed their RBCs except for benzo(b)fluoranthene at 3,000 µg/kg, benzo(a)pyrene at 1,400 µg/kg, and dibenz(a,h)anthracene at 520 µg/kg in a soil sample collected at 3 feet depth in NW 25th Avenue near NW Nicolai Street..

2.5.2 Results of Groundwater Sampling

Metals were not detected in groundwater at concentrations that exceed their SLVs although many of the metals' PQLs were slightly to significantly higher than their SLVs. Copper, lead, nickel and selenium PQLs were slightly higher to 3 times higher than their SLVs. Arsenic and cadmium PQLs were 2 orders of magnitude higher than their SLVs but none of these metals, except for lead, were detected at elevated concentrations in onsite soil.

Only chloroform was detected in MW-1 and MW-3 at concentrations 2 to 10 times higher than the SLV. Chloroform is a common laboratory contaminant. Many chemical PQLs were slightly to significantly higher than their SLVs. PCB Aroclor PQLs were only slightly higher than their SLVs and only Aroclor 1248 was detected in soil in boring B3 but not at concentrations above its soil SLV. Some pesticide PQLs were 1 to 2 orders of magnitude higher than their SLVs but again pesticides are not identified as chemicals known to be used on site. In addition, if chemicals are hypothetically present in groundwater at very low concentrations, where they were not detected and their PQLs exceed the SLVs, they would be subjected to attenuation and degradation processes along their migration pathway assuming groundwater from beneath the site at static level depths exceeding 40 feet does in fact discharge to surface water.

2.5.3 Conclusions of Soil and Groundwater Investigation

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at elevated concentrations in soil or groundwater beneath the Site at tested locations. Only cadmium, lead and mercury, and some PAHs, are present in soil at concentrations that exceed their SLVs or RBCs in a limited area mostly beneath the existing building floor slab or beneath the asphalt cap of NW 25th Avenue.

2.6 Results of Stormwater Source Control Evaluation

The stormwater source control evaluation focused on potential sources of PCBs with the potential to migrate to the Willamette River via stormwater. Initially PCBs were detected in catch basin sediment and the evaluation expanded to identify sources of PCBs to the catch basins.

2.6.1 Catch Basin Sediment

Catch basin sediment sampling results are presented in "Stormwater Catch Basins Sediment Sampling Report", dated May 2009. The site stormwater system consists of six catch basins; two of the catch basins (CB-1 and CB-2) collect and direct stormwater to an onsite treatment system with final discharge to the City of Portland stormwater system. Three catch basins (CB-3 through CB-5) discharge to the City's CSO system. Of these three, two of the catch basins discharge to an oil/water separator prior to discharge to the CSO and one (CB-5) is not treated prior to discharge to the CSO. The remaining catch basin (CB-6) discharges untreated stormwater directly to the sanitary sewer.

Catch basin sediment samples were analyzed for metals, PCBs (individual Aroclors and total PCBs), organochlorine pesticides, semivolatile organic chemicals, polynuclear aromatic hydrocarbons (PAHs) and phthalates, and total organic carbon. Maximum concentrations of detected chemicals are summarized in Table 1.

Nickel, zinc, mercury, silver, chromium, copper, lead and cadmium were detected in one or more catch basin at concentrations that exceeded their DEQ Portland Harbor Joint Source Control Strategy screening levels (JSCS SLVs, December 2005, revised 2007). Semivolatile organic chemicals were not detected except for bis(2-ethylhexyl)phthalate which exceeded its JSCS SLV. PAHs were detected in all catch basins above JSCS SLVs but likely represent common industrial sources including asphalt, fuel, oil and grease. Only Aroclor 1242 was detected in all but one catch basin. Aroclors 1016, 1254 and 1260 were not detected in any of the catch basin samples, but at detection levels that were up to one order of magnitude higher than their JSCS SLV so it is uncertain whether these Aroclors were actually not present in catch basin sediment.

Table 1 – Catch Basin Sediment Sample Maximum Concentrations

Chemical	JSCS SLV	Maximum Concentration	Location
Antimony	64	471	CB-5
Cadmium	4.98/1	21.2	CB-5
Chromium	111	1320	CB-1
Copper	149	80,500	CB-5
Lead	128/17	3320	CB-6
Mercury	1.06/0.07	1.71	CB-5
Nickel	48.6	900	CB-1
Silver	5	23.7	CB-5
Zinc	459	37,500	CB-5
Bis(2-ethylhexly)phthalate	0.8/0.33	570	CB-5
2-Methylnaphthalene	0.2	1.01	CB-1
Acenaphthene	0.3	2.19	CB-1
Anthracene	0.845	1.55	CB-1
Benzo(a)anthracene	1.05	6.95	CB-1
Benzo(a)pyrene	1.45	3.98	CB-5
Benzo(ghi)perylene	0.3	4.94	CB-3
Benzo(k)fluoranthene	13	5.81	CB-3
Chrysene	1.29	20.6	CB-3
Dibenzo(ah)anthracene	1.3	0.914	CB-4
Fluoranthene	2.23/37	21.3	CB-3
Fluorene	0.536	1.01	CB-1
Ideno(1,2,3-cd)pyrene	0.1	3.73	CB-3
Naphthalene	0.561	2.54	CB-1
Phenanthrene	1.17	9.29	CB-5
Pyrene	1.52/1.9	20.8	CB-5
Aroclor 1242	na	11.7	CB-5
Notes: concentrations in mg/kg, na means no JSCS SLV available, six catch basins CB-1 through CB-6. Highlighted concentrations exceed the JSCS SLV.			

Based on the results of the catch basin sediment samples analyses, all of the catch basins were subsequently cleaned using vacuum and power washing systems. In addition, a video survey was made of the stormwater line leading from CB-5 to the City of Portland stormwater line in NW 25th Place to confirm the connection and integrity of the line leading from CB-5.

2.6.2 Asphalt and Roadways

Sampling of onsite building roofs and sediment between cobblestones in NW 25th Place was conducted to determine potential sources of contamination detected in the onsite stormwater catch basins. Results of this sampling were presented in a letter report to Calbag Metals Company, from GeoPro Geologic Services (GeoPro LLC), dated August 19,

2009. Four randomly selected roof sediment samples were collected and four samples were collected of sediment from between cobblestones in NW 25th Place. Cobblestone sediment samples were collected offsite at the entrance area to the site to evaluate impact of use of this critical site access. All samples were analyzed only for PCBs (Aroclors).

PCBs were not detected in any of the roof samples above a detection limit of 2 µg/kg. Maximum concentrations of Aroclors detected in cobblestone sediment included Aroclor 1242 at 2,300 µg/kg, Aroclor 1254 at 3,700 µg/kg, and Aroclor 1260 at 780 µg/kg. The maximum concentrations of Aroclor 1254 and 1260 exceeded their respective JSCS SLVs of 300 and 200 µg/kg. Roof sediments were not determined to be a source of PCBs in catch basins, whereas PCBs were present in the NW 25th Place roadway.

In October 2009 additional samples were obtained from asphalt and soil beneath the asphalt in NW 25th Place and several locations on the Site to further evaluate potential sources of PCBs to catch basin sediment. Results of the sample analyses are reported in a letter report to Calbag Metals Company, from GGS, dated November 9, 2009. Thirteen surface asphalt samples and three soil samples beneath the asphalt were collected. The samples were analyzed for PCBs (Aroclors). Maximum Aroclor concentrations detected in onsite asphalt samples included Aroclor 1242 in all but two asphalt samples at 4060 µg/kg, Aroclor 1254 at 874 µg/kg, Aroclor 1262 at 200 µg/kg, and Aroclor 1268 at 47.1 µg/kg. Only Aroclor 1254 exceeded its JSCS SLV of 300 µg/kg. Only Aroclor 1254 was detected in soil samples from beneath the asphalt onsite at a maximum concentration of 209 µg/kg which is below the JSCS SLV of 300 µg/kg.

2.6.3 Building Surfaces

Additional sampling was conducted of asphalt in driveways adjacent to the warehouse and of concrete flooring within the warehouse in December 2009. Results of the sample analyses are reported in a letter report to Calbag Metals Company, from GGS, dated January 19, 2010. Nine concrete and asphalt samples were collected and analyzed for PCBs (Aroclors).

Maximum concentrations of PCBs detected in asphalt roadway samples included Aroclor 1242 at 58.6 µg/kg, Aroclor 1254 at 69.6 µg/kg, and Aroclor 1260 at 21.6 µg/kg. Maximum concentrations of PCBs detected in building exterior concrete include Aroclor 1242 at 9.44 µg/kg, Aroclor 1254 at 20.8 µg/kg and Aroclor 1260 at 10.8 µg/kg. None of these results exceed the respective JSCS SLVs.

Aroclors 1242, 1254 and 1260 were detected in all samples collected from the concrete floor inside the onsite warehouse. Maximum concentrations of PCBs detected included Aroclor 1242 at 1560 µg/kg, Aroclor 1254 at 941 µg/kg and Aroclor 1260 at 278 µg/kg, with Aroclors 1254 and 1260 exceeding their respective JSCS SLVs of 300 and 200 µg/kg.

2.7 Risk Screening for Chemicals of Concern

2.7.1 Chemicals of Concern

The main chemicals of concern for the site are PCBs, analyzed as Aroclors. Initially, the source control evaluation considered metals, pesticides, semivolatile organic chemicals, PAHs, phthalates, and PCBs as chemicals of interest. Metals, PAHs, one phthalate, and PCBs were detected in onsite catch basin sediment above JSCS SLVs. Subsequently, all catch basins were cleaned and the stormwater line connecting CB-5 to the City of Portland stormwater line in NW 25th Avenue was surveyed. As a result of catch basin cleaning and establishment of a routine catch basin cleaning program, the list of chemicals of interest was narrowed to PCBs.

2.7.2 Exposure Pathways

The primary exposure pathway evaluated for the source control evaluation was the stormwater pathway, that is, the potential for site contaminants to move to surface water via stormwater or catch basin sediment. JSCS SLVs for soil/sediment toxicity were used to evaluate analytical data from catch basin sampling. The site stormwater treatment system is being upgraded to treat all site stormwater prior to discharge to the City of Portland stormwater system.

All other data collected during the site investigation were evaluated using DEQ occupational exposure RBCs for soil data or JSCS SLVs for surface water for groundwater data

2.7.3 Hot Spots of Contamination

Hot spots of contamination are defined in OAR 340-122-0115(31)(b) for media other than water as hazardous substances that present a risk to human or environmental receptors that exceeds the acceptable risk level at 100 times the human RBC for individual carcinogens, 10 times the human RBC for individual non-carcinogens, and for ecological receptors exceeds at 10 times the acceptable level for individual threatened and endangered species or populations of non-threatened and endangered species for each hazardous substance. Other criteria that define hot spots include being highly mobile and likely to migrate to other media to such an extent as to create an adverse impact on beneficial use of water or exceed RBCs in other media, and that the contamination is not reliably containable. If hot spots of contamination are present on a site then remedial alternatives will be evaluated using a higher cost threshold for treatment of the hot spots.

Results of the Calbag site investigation were evaluated to determine whether hot spots of contamination are present on the site. Areas evaluated for presence of hot spots include the asphalt driveway on the northwest side of the building (NW 25th Avenue), and concrete flooring within the storage warehouse buildings.

Aroclor 1254 and 1260 are the only PCBs that exceed their respective JSCS SLVs of 300 and 200 μg/kg respectively. Applying the hot spot concentration criteria of 100 times the risk-based concentrations (JSCS SLVs) the hot spot concentrations would be 30,000 and 20,000 μg/kg, respectively. The maximum concentration of Aroclor 1254 onsite is 874 μg/kg in asphalt and 961 μg/kg in concrete, and the maximum concentration of Aroclor 1260 onsite is 21.6 μg/kg in asphalt and 278 μg/kg in concrete. These concentrations are two orders of magnitude below the calculated hot spot concentrations.

Results of the site investigation indicate that PCB concentrations in asphalt and concrete flooring are elevated above their SLVs, but that no hot spots of contamination are present on the Calbag site in asphalt or concrete flooring surfaces.

2.7.4 Calculation of Remediation Areas

Aroclor 1254 was detected in asphalt driveways and near onsite buildings at maximum concentrations that exceed the JSCS SLV of 300 μg/kg. Aroclors 1254 and 1260 were detected in concrete flooring inside the onsite warehouse at maximum concentrations that exceed their respective JSCS SLVs. The areas to be addressed in this FFS include all concrete flooring surfaces inside the main metals storage warehouse building, the asphalt driveway along NW 25th Avenue (including NW 25th Place which will both be hereinafter referred to as NW 25th Avenue), and asphalt and concrete surfaces in the tent area. These areas are shown on the Remediation Areas Map of Figure 3.

The total area in terms of square footage for each of the surface areas to be addressed has been calculated. The concrete floor area inside the warehouse building measures approximately a total surface area of 41,415 square feet with an estimated low traffic area of 29,000 square feet. The asphalt surface of the NW 25th Avenue area is about a total surface area of 11,050 square feet. The surface in the tent area consists of asphalt pavement separated by a central area of concrete surface. The asphalt pavement in the tent area measures about a total combined area of 3,808 square feet. The concrete surface in the tent area measures a total surface area of 2,890 square feet.

2.8 Pilot Study to Evaluate Washing Technologies

A pilot study was conducted during May and June 2010 to evaluate the effectiveness of three PCB washing technologies: washing with water, with a water and detergent mixture, and with a surfactant. The pilot study also provided data for estimating costs for the alternatives using these washing technologies. Test areas were identified for asphalt and concrete surfaces and sampling of the surfaces for PCBs was conducted before and after cleaning as a basis for evaluation of effectiveness of the cleaning technology. The report on the pilot test is included in Appendix A.

2.8.1 Sampling Approach

A total of 24 primary samples, and 8 duplicate samples, were collected for analysis. Two pre-test and two post-test samples were collected at each of the three asphalt test areas. Asphalt pre-test and post-test samples were taken at depths of 0 to 1 inch and at 1.5 inches. In the water and detergent concrete test areas, two pre-test and two post-test samples were collected at depths of 0 to 1 inch and at 3 inches. In the Capsur concrete test areas two samples, and two duplicate samples, each at 0 to 1, and, 3 inch depths, were collected. Post-wash samples were collected adjacent to the pre-wash sample locations.

Asphalt samples were collected with a diamond saw and chisels. Surface samples from concrete were collected from grid cuts made with a diamond saw and clean chisels. Samples at 3 inches depth below the concrete floor surface were collected using a core drill. Each core was then crushed with a clean hammer and the material placed in new 8-ounce glass jars furnished by the laboratory. New latex gloves were used to collect all samples. Post-wash samples were collected adjacent to the pre-wash sample locations. All asphalt and concrete samples were unpreserved and placed in an ice chest with blu-ice to maintain the samples at 4°C for shipment.

2.8.2 Results of Pilot Study

Only Aroclors 1242 and 1254 were detected in asphalt and concrete samples. The criteria used for evaluation of the test data include JSCS SLV soil/stormwater sediment toxicity criteria[1] of 676 µg/kg for total PCBs and 300 µg/kg for Aroclor 1254. There is not a JSCS SLV for Aroclor 1242. DEQ requested a PCB method detection limit of 10 µg/kg for total PCBs which could not be achieved in all sample analyses.

The highest concentration of PCBs detected was in a pre-test water and detergent concrete sample for Aroclor 1254 at 628 µg/kg in sample CS-5. The lowest concentration of PCBs detected in a pre-test Capsur concrete sample for Aroclor 1254 at 5.18 µg/kg in sample CS-11. The following concrete samples exceeded the JSCS SLV for soil/stormwater sediment toxicity for Aroclor 1254 of 300 µg/kg.

Table 2 – PCB Surface Washing Pilot Test Results >300 µg/kg

Sample	Media	Cleanup Media	Depth	Test	Aroclor	Analytical Result
CS-3	concrete	water	0-1"	post	1254	400 µg/kg
CS-5	concrete	spicNspan	0-1"	pre	1254	628 µg/kg
CS-7	concrete	spicNspan	0-1"	post	1254	353 µg/kg
CS-9	concrete	Capsur	0-1"	pre	1254	355 µg/kg
CS-10 duplicate CS-9	concrete	Capsur	0-1"	pre	1254	333 µg/kg
CS-13	concrete	Capsur	0-1"	post	1254	387 µg/kg

Detection limits achieved for the asphalt and concrete analyses were generally below about 66 µg/kg, with only a small percentage between 100 to 134 µg/kg, and also a small percentage below about 7 µg/kg. Where PCBs were not detected, the detection limits were all well below the JSCS screening criteria for soil/stormwater sediment toxicity for Aroclors and total PCBs, even though most detection limits were above the DEQ-requested 10 µg/kg.

[1] Portland Harbor Joint Source Control Strategy, Table 3-1, Dec. 2005, July 2007 revision

2.8.3 Conclusions

Washing the surfaces of asphalt and concrete with water generally did not reduce the concentrations of PCBs. In the water washing method, the PCB concentrations decreased only in one sample of asphalt at 1.5 inches depth.

Washing the surface of the asphalt test area with a water and detergent mixture produced indeterminate results. The PCB concentrations at the surface appear to increase and the PCB concentrations at 1.5 inch depth appear to decrease. For the concrete surface, the PCB concentrations appear to slightly decrease at the surface and at 3 inches depth.

Washing the surface of the asphalt test area with the Capsur appeared to reduce the PCB concentrations at both the 0 to 1 and 1.5 inch depths. Washing the surface of the concrete test area produced indeterminate results with some results appearing to increase in the post-test samples and other results appearing to decrease.

Capsur may be somewhat affective in the case of the asphalt surface; however the cost of the product may outweigh the minimal decrease in overall PCB concentration.

3 DEVELOPMENT OF REMEDIAL ACTION ALTERNATIVES

This section presents a discussion of the site remedial action objectives and general response actions. Because this is a focused feasibility study, only general response actions that are appropriate and feasible for site have been included. These general response actions have also been assembled into remedial action alternatives and discussed in subsections to follow. The remedial action alternatives include source control measures.

3.1 Remedial Action Objectives

Remedial Action Objectives are medium-specific goals for protecting human health and the environment and provide the basis for evaluation of remedial alternatives. The following RAOs are based on the information collected during the remedial investigation. RAOs must be protective as specified in OAR 340-122-0040(2) and achieve the acceptable risk levels defined in OAR 340-122-0115. RAOs must also treat or excavate hot spots of contamination to the extent feasible. No hot spots of contamination were identified for this site.

The following RAOs have been developed for this site:

- Prevent exposure to soil, asphalt, cobblestone or concrete surfaces that contain PCBs at levels that pose a risk to occupational workers for a lifetime excess cancer risk greater than $1x10^{-6}$ for individual carcinogens or $1x10^{-5}$ for multiple carcinogens, or a Hazard Index of 1.
- Prevent migration of soil or particulates containing PCBs to the site stormwater system that may discharge to surface water at concentrations that exceed JSCS SLVs for freshwater aquatic receptors.

3.2 General Response Actions

A range of remedial action alternatives must be developed that are acceptable to DEQ and that consist of general response actions that can satisfy the remedial action objectives. OAR 340-122-0085(2) states that the range of remedial alternatives should be based on the following general response actions:

- No Action – no actions that reduce exposure potential should be included and this alternative is a baseline for comparison with other action alternatives.
- Engineering/Institutional Controls – physical measures that prevent or minimize exposure, or legal/administrative measures that reduce exposure, to hazardous substances.
- Treatment – reduction or elimination of the toxicity, mobility or volume of hazardous substances that is substantial or permanent. Treatment may include monitored natural attenuation or *in situ* or *ex situ* technologies.
- Excavation and off-site disposal – excavated wastes are managed at an appropriate and authorized facility that may require pre-treatment to meet solid and hazardous waste disposal requirements.
- Any combination – the range of remedial alternatives should include several general response actions. Alternatives that address hot spots of

contamination should include treatment, excavation or off-site disposal general response actions.

3.3 Remedial Alternatives

Seven remedial alternatives have been developed to meet the RAOs for the Site. Except for the No Action Alternative, all of the developed remedial alternatives would be protective of human health and the environment to varying degrees. The remedial alternatives do include treatment technologies even though hot spots of contamination are not present on the Site. Some of the remedial alternatives include excavation and offsite disposal of existing asphalt or concrete surfaces as part of repaving or replacing the concrete. Estimated costs for the remedial alternatives is presented in Tables 3 and 4.

3.3.1 Common Elements for Proposed Alternatives

Certain remedial actions have been identified as common to all proposed remedial alternatives regardless which alternative is selected as the final remedial alternative for the site (except for the no action alternative). Because these common elements are expected to be implemented, they are discussed separately in this section and not repeated in the description of each proposed alternative.

The following is a description of the proposed common remedial elements. The components and estimated costs for these common elements are summarized in Table 3.

3.3.1.1 Clean onsite asphalt and warehouse concrete surfaces.

Limited areas of both the asphalt pavement surfaces and the concrete surfaces inside the warehouse would be cleaned using water to remove particles adhering to surfaces. The area to be cleaned would only be those areas that are readily accessible, and where sealant would be applied. The wash water would be treated using the existing oil/water separator and then discharged to the City's CSO system. Washing of only accessible areas and surfaces where sealant would be applied would minimize the significant interruption of the ongoing business operation that could result in severe economic impact. In addition, stormwater monitoring for the years 2009 through 2010 show that the existing Stormwater RX system effectively removes particulates from stormwater to levels one or two orders of magnitude below the permit benchmarks for metals (copper, lead and zinc).

3.3.1.2 Source Control Stormwater Treatment System Modification for the CB-5 Area.

The modification to the CB-5 area, required as a Stormwater Source Control Mitigation Measure by DEQ, will consist of abandoning and plugging existing discharge lines from CB-5, installing a new discharge line leading from CB-5 to the oil/water separator, and replacing CB-5 with a larger catch basin. A new treatment system is also proposed to be installed downstream of the existing oil/water separator, which would provide removal of PCBs in stormwater prior to discharge to the City's CSO system. The proposed treatment system is a StormwateRx system. The existing discharge line connecting the oil/water separator to the CSO in NW 25th Place would also be replaced with a larger-diameter pipe to accommodate increased flows. This work would be coordinated with the City of Portland in terms of access and permitting.

3.3.1.3 Install Cover System for Metal Stockpiles on NW 25th Avenue (Alley)

As required by City of Portland "Stormwater Management Manual", September 2004, section 4.5, a cover system for outdoor storage of bulk materials will be constructed. The bulk material storage area is in the "alley" located along NW 25th Avenue. The stored bulk materials consist of metal which is classified as a low-risk material in the City's stormwater manual. The cover system will consist of a pole frame with canvas top, similar to the covering located in the "tent area" of the property. The cover system will meet the requirements listed in the City's stormwater manual including cover overhang distances of 3 feet for heights of 10 feet or less or 5 feet for heights of more than 10 feet.

3.3.1.4 Replace Tent Area Concrete

Concrete in the Tent Area will be removed and disposed offsite and new concrete will be placed.

3.3.1.5 Stormwater Monitoring.

A Stormwater Monitoring Plan would be developed during design and implementation of the final remedy and would be focused on sampling stormwater from the site. The purpose of the monitoring would be to evaluate the effectiveness of the implemented remedy and provide data for the DEQ Source Control Decision for the site. This sampling would be supplemental to the sampling requirements of the 1200Z ISG permit. One year of stormwater monitoring would be conducted for the Source Control Decision, and an additional 1 or 2 years of monitoring conducted to verify that the implemented remedy is operating at optimal performance and any modifications needed are made.

3.3.1.6 Best Management Practice Manual.

A Best Management Practice (BMP) manual would be prepared as part of the remedy design/construction process to provide methods and protocol to minimize future contamination of site stormwater and effectively maintain the stormwater collection and conveyance system. Because treatment may not be implementable for all asphalt and concrete surfaces, other BMPs such as stormwater diversion, covering materials handling areas, or increased cleaning measures may be needed in higher traffic areas. The BMP Manual would be incorporated into the site's Stormwater Pollution Control Plan that is required by the 1200Z ISG permit.

3.3.2 Alternative 1 – No Action

As required by DEQ cleanup law, this alternative would take no action to achieve RAOs by cleanup of contamination on the site or to mitigate or control stormwater sources of contamination. Existing contaminant conditions would remain and traffic across the Site that may distribute contamination would continue. All monitoring wells on the Site would be decommissioned.

The cost for Alternative 1 would be $12,075.

3.3.3 Alternative 2 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, no Treatment for Asphalt in the Back Yard, and no Treatment for the Building Concrete Floor.

This alternative would repave the asphalt areas with highest PCB concentrations, exceeding the JSCS SLVs, but would not provide further treatment (that is, no repaving or sealing) for the Back Yard asphalt where PCBs have been detected at concentrations ranging up to JSCS SLVs, or for the building concrete floor where PCBs exceed the JSCS SLVs over the majority of the floor area. The Project Map of Figure 1 shows where the asphalt and concrete surfaces are located. Asphalt in the Tent Area next to the building will be removed and new asphalt will be placed. Asphalt at the rear of the Tent Area will be repaved. Asphalt in the 25th Avenue Area will be repaved.

Asphalt paving would meet the PDOT and ODOT standards, and be designed to withstand the wear of vehicles typical to the site. Concrete surface would be designed to withstand heavy loads of site traffic. The new asphalt pavement and concrete is intended to cut off the pathway of PCBs from the older pavement or cobblestone/soil below, to the stormwater system. The new pavement will likely be less permeable than the existing pavement and therefore improve conditions for potential leaching of contamination from existing asphalt/cobblestones/soil and downward movement of contamination to underlying groundwater by reducing overall stormwater infiltration. The repaved asphalt and replaced concrete areas would be appropriately sloped to drain to the existing catch basins and prevent offsite stormwater runoff.

The cost for Alternative 2 including common elements would be $392,452.

3.3.4 Alternative 3 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, no Treatment for Asphalt in the Back yard, and Seal Limited Areas of the Building Concrete Floor.

The 25th Avenue and Tent Areas would be repaved and concrete replaced, and there would be no treatment for the asphalt in the Back Yard area as described in Alternative 2. The concrete floor in the building would be sealed in only those areas of lower traffic. The higher traffic areas would not be sealed because the type of vehicular use and movement of stored materials use would rapidly remove the sealant requiring re-application of the sealant at some frequency.

The cost for Alternative 3 including common elements would be $397,063.

3.3.5 Alternative 4 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, Seal Targeted Areas of Asphalt in the Back Yard, and Seal Limited Areas of the Building Concrete Floor.

The 25th Avenue and Tent Areas would be repaved and concrete replaced as in Alternative 2. The asphalt in the Back Yard Area would be sealed in targeted areas of highest PCB concentrations and highest traffic to prevent movement of PCBs as particulates to the stormwater system. The concrete floor in the building would be sealed in only those areas of lower traffic as in Alternative 3.

The cost for Alternative 4 including common elements would be $404,212.

3.3.6 Alternative 5 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, Seal the Entire Asphalt Surface in the Back Yard, and no Treatment for the Building Concrete Floor.

The 25th Avenue and Tent Areas would be repaved and concrete replaced as in Alternative 2. The entire asphalt surface in the Back Yard Area would be sealed in this alternative, as opposed to partial sealing as in Alternative 4. No further treatment would be implemented for the building concrete floor.

The cost for Alternative 5 including common elements would be $412,979.

3.3.7 Alternative 6 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, Seal the Entire Asphalt Surface in the Back Yard, and Seal the Entire Building Concrete Floor.

The 25th Avenue and Tent Areas would be repaved as in Alternative 2 and the entire asphalt surface in the Back Yard Area would be sealed as in Alternative 5. The entire building concrete floor would be sealed. Areas of higher traffic may require re-application of the sealant at some frequency.

The cost for Alternative 6 including common elements would be $419,516.

3.3.8 Alternative 7 - Repave All Asphalt Surfaces and Seal the Entire Building Concrete Floor

All asphalt surfaces in the 25th Avenue, Tent and Back Yard areas would be repaved, the concrete surface in the Tent Area would be replaced, and the entire surface of the building concrete floor would be sealed. This would be the most comprehensive alternative for cutting off the pathway of PCBs in asphalt and concrete surfaces to the stormwater system. However, this alternative would also pave and seal areas where PCBs may not exceed JSCS SLVs and also areas where normal vehicular and product movement wear may require re-application of sealant at some frequency.

The cost for Alternative 7 including common elements would be $566,578.

4 EVALUATION OF REMEDIAL ACTION ALTERNATIVES

4.1 Evaluation Criteria

Remedial alternatives are evaluated through a process that considers alternatives on an individual basis and then in comparison to each other, with respect to the protectiveness criterion, five remedial selection balancing factors, and the preference for treating hot spots of contamination. Hot spots of contamination have not been identified on the site. The evaluation criteria, including protectiveness, and the five balancing factors, are discussed below. Because the common elements discussed in section 3.3.1 would be implemented for all alternatives, except for Alternative 1 No Action, the evaluation of each alternative, and the comparative evaluation of alternatives, will focus on the remedial elements that are in addition to the common elements.

4.1.1 Protectiveness

Oregon cleanup law requires that all remedies be protective of human health and the environment. Protectiveness as specified in OAR 340-122-0084(4) is demonstrated with a residual risk assessment. The residual risk assessment uses quantitative and qualitative assessments to demonstrate that acceptable levels of risk are achieved through remediation.

4.1.2 Effectiveness

Effectiveness is an assessment of the ability of the remedial action to achieve the specified level of protection at the completion of remedial action without further onsite risk management. Effectiveness is defined in OAR 340-122-0090(3)(a).

4.1.3 Long-Term Reliability

Long-term reliability, defined in OAR 340-122-0090(3)(b), is an assessment of the remedial alternative's ability to maintain the level of protection over the long-term after the remedy has been implemented.

4.1.4 Implementability

Implementability, defined in OAR 340-122-0090(3)(c), is an assessment of the ease or difficulty in implementing the remedy.

4.1.5 Implementation Risk

Implementability, defined in OAR 340-122-0090(3)(c), is an assessment of the ease or difficulty in implementing the remedy.

4.1.6 Reasonableness of Cost

Reasonableness of cost, defined in OAR 340-122-0090(3)(e), is a two part assessment including the determination of the cost of each alternative and then the proportionality of the alternative's cost to benefits achieved. A higher threshold of cost is applied to treatment of hot spots of contamination.

Table 3 – Cost Estimates for Common Elements

Common Elements for Alternatives 2 through 7:		Quantity	Unit	Unit Costs	Extended Cost		Notes
Clean Onsite Asphalt and Warehouse Concrete Surfaces							
Clean Surfaces		2	man-days	$400	$800		Assumes Calbag provides labor
Pressure Washer Rental		12	hour	$45	$540		NRC Environmental Services Price List of 3000 to 6000 psi pressure washer rental.
					Subtotal:	$1,340	
Source Control Stormwater Treatment System Modifications							
Capital Costs							
Surveying		1	lump sum	$2,500	$2,500		Proposal from AKS Engineering & Forestry
Utility Locate		1	lump sum	$400	$400		Hart Crowser estimate based on similar projects.
Contractor Equipment Mobilization/Demob		1	lump sum	$3,500	$3,500		Hart Crowser estimate based on similar projects.
Replace Catch Basin CB-5 (materials & installation)		1	lump sum	$2,100	$2,100		Assumes cast iron, 24-inch diameter, rated for heavy equipment. RS Means Heavy Construction Cost Data, 2008.
Abandon 8-in Sewer Discharge Line from CB-5 (135 feet) w/CDF		1.75	CY	$150	$263		RS Means Heavy Construction Cost Data, 2008.
New 8-in PVC Sewer Line from CB-5 for O/W Separator (materials & installation, excl. earthwork)		145	LF	$17.30	$2,509		Assumes PVC pipe, SDR 26. RS Means Heavy Construction Cost Data, 2008.
New 8-inch PVC Sewer Line from O/W Separator to CSO (materials and installation, excl. earthwork)		50	LF	$17.30	$865		Assumes PVC pipe, SDR 26. RS Means Heavy Construction Cost Data, 2008.
Misc. Pipe Fittings		1	lump sum	$2,000.00	$2,000		PVC elbows, tees, couplings. Hart Crowser estimate based on similar projects.
Pavement removal along sewer alignments		300	SF	$1.99	$597		Assumes 6-inch thick pavement. RS Means Heavy Construction Cost Data, 2008.
Pipe trench excavation		200	LF	$1.03	$206		Assumes 16-in. wide, 24-inch deep trench using chain trencher. RS Means Heavy Construction Cost Data, 2008.
Pipe trench bedding material, backfill & compaction		22	CY	$51.66	$1,137		Assumes crushed bank run gravel material, placed, and compacted. RS Means Heavy Construction Cost Data, 2008.
StormwateRx Treatment System		1	lump sum	$66,500	$66,500		Estimate based on installation of a StormwateRx Aquip Model 80SBE system at similar site.
Foundation for Treatment System		7	CY	$385	$2,695		Assumes 10 ft x 25 ft x 8 in thick pad. RS Means Heavy Construction Cost Data, 2008.
Electrical Installation		50	LF	$2.85	$143		Assumes 1.5-in PVC conduit and single-phase No 10 AWG electrical wire. Hart Crowser estimate based on similar projects.
Electrical Connection		3	hour	$175.00	$525		Connection of pump to electrical panel by licensed electrician. Hart Crowser estimate based on similar projects.
City Permitting Fees		1	lump sum	$2,500	$2,500		
Engineering & Permit Applications		1	lump sum	$5,000	$5,000		
Construction Oversight		2	day	$1,200	$2,400		
As-built Drawings		1	lump sum	$2,000	$2,000		
Reporting		1	lump sum	$2,000	$2,000		
Contingency (15%)					$14,976		
	Total Capital Costs					$114,814	
Operation and Maintenance Costs*							
StormwateRx Treatment System O&M		30	years	$5,650	$77,771		Filter maintenance and replacement estimate based on installation of StormwateRx Aquip Model 80SBE system at similar site.
	Total Present Worth O&M Costs					$77,771	
Total Present Worth Capital & O&M Costs						$192,585	
Installation of Cover System for Metal Stockpiles							
Cover System for NW 25th Ave/Alley Stockpiles		5,000	SF	$22	$110,000		Quote obtained by Calbag Metals in Sept 2010.
Cover System for Storage Bins Opposite Titanium Tent		1,680	SF	$22	$36,960		Quote obtained by Calbag Metals in Sept 2010.
					Subtotal:	$146,960	
Replace Tent Area Concrete							
Removal of Existing Concrete		2,890	SF	$1.99	$5,751		Assumes 6-inch thick pavement. RS Means Heavy Construction Cost Data, 2008.
Recycling/Disposal of Old Concrete, incl. transporation		108	tons	$20	$2,168		Hart Crowser estimate based on similar projects.
Placement of New Concrete		321	SY	$27	$8,509		Assumes placement of 6-inch thick, unreinforced concrete. RS Means Heavy Construction Cost Data, 2008.
Contingency (15%)					$2,464		
					Subtotal:	$18,892	
Stormwater Monitoring							
Develop Stormwater Monitoring Plan		1	lump sum	$3,000	$3,000		
Stormwater Monitoring - Sampling and Analysis		4	events	$400	$1,600		Assumes collection of one sample per event; analyzed for TSS & PCBs. Includes labor, equipment, and lab costs.
					Subtotal:	$4,600	
BMP Manual							
Develop BMP Manual		1	lump sum	$3,000	$3,000		
					Subtotal:	$3,000	
Total Cost for Common Elements						**$367,377**	
Notes:							
* Present value costs calculated with an annual discount rate of 6.0%.							
CDF = controlled density fill							
PVC = polyvinylchloride	LF = linear feet						
O/W = oil/water	CY = cubic yard						
CSO = combine sewer overflow system	SF = square feet						
O&M = Operation and Maintenance	SY = square yard						
BMP = Best Management Practices							

Table 4 – Cost Estimates for Alternatives

Alternative and Description	Quantity	Unit	Unit Costs	xtended Cost		Notes
Alternative 1 - No Action						
Driller Mobilization/Demobilization	1	lump sum	$2,000	$2,000		
Monitoring Well Decommissioning	3	wells	$2,000	$6,000		
Field Oversight	1	man-days	$1,000	$1,000		
Reporting	1	lump sum	$1,500.0	$1,500		
Contingency (15%)				$1,575		
				Subtotal:	$12,075	
Alternative 1 Total Costs					**$12,075**	
Alternative 2 - Repave Asphalt in NW 25th Ave & Tent Areas						
Contractor Mobilization/Demobilization	1	lump sum	$1,000	$1,000		Hart Crowser estimate based on similar projects.
Asphalt Repaving, incl. material and labor	14,860	SF	$1.40	$20,804		Assumes 2-inch thick asphalt overlay. Quote obtained by GGS.
Contingency (15%)				$3,271		
				Subtotal:	$25,075	
Common Elements (Table A-1)					$367,377	
Alternative 2 Total Costs with Common Elements					**$392,452**	
Alternative 3 - Repave Asphalt in NW 25th Ave & Tent Areas, Seal Limited Areas of Building Floor						
Contractor Mobilization/Demobilization	1	lump sum	$1,000	$1,000		Hart Crowser estimate based on similar projects.
Asphalt Repaving, incl. material and labor	14,860	SF	$1.40	$20,804		Assumes 2-inch thick asphalt overlay. Quote obtained by GGS.
Seal Building Concrete Floor, labor	24	hour	$10.00	$240		Assumes labor supplied by Calbag Metals to move stockpiles and apply sealant.
Concrete Sealant Material	29,000	SF	$0.13	$3,770		Quote obtained by GGS.
Contingency (15%)				$3,872		
				Subtotal:	$29,686	
Common Elements (Table A-1)					$367,377	
Alternative 3 Total Costs with Common Elements					**$397,063**	
Alternative 4 - Repave Asphalt in NW 25th Ave & Tent Areas, Seal Limited Areas of Building Floor, Seal Targeted Areas of Asphalt in Back Yard						
Contractor Mobilization/Demobilization	1	lump sum	$1,400	$1,400		Hart Crowser estimate based on similar projects.
Asphalt Repaving, incl. material and labor	14,860	SF	$1.40	$20,804		Assumes 2-inch thick asphalt overlay. Quote obtained by GGS.
Seal Building Concrete Floor, labor	24	hour	$10.00	$240		Assumes labor supplied by Calbag Metals to move stockpiles and apply sealant.
Concrete Sealant, material	29,000	SF	$0.13	$3,770		Quote obtained by GGS for Sealcoat.
Asphalt Sealant, material and labor	29,080	SF	$0.20	$5,816		Assumes 1/3 total area of Back Yard requires sealant. Quote obtained by GGS.
Contingency (15%)				$4,805		
				Subtotal:	$36,835	
Common Elements (Table A-1)					$367,377	
Alternative 4 Total Costs with Common Elements					**$404,212**	
Alternative 5 - Repave Asphalt in NW 25th Ave & Tent Areas, Seal All Asphalt Areas in Back Yard						
Contractor Mobilization/Demobilization	1	lump sum	$1,400	$1,400		Hart Crowser estimate based on similar projects.
Asphalt Repaving, incl. material and labor	14,860	SF	$1.40	$20,804		Assumes 2-inch thick asphalt overlay. Quote obtained by GGS.
Asphalt Sealant, material and labor	87,250	SF	$0.20	$17,450		Assumes all asphalt areas of Back Yard require sealant. Quote obtained by GGS.
Contingency (15%)				$5,948		
				Subtotal:	$45,602	
Common Elements (Table A-1)					$367,377	
Alternative 5 Total Costs with Common Elements					**$412,979**	
Alternative 6 - Repave Asphalt in NW 25th Ave & Tent Areas, Seal All Areas of Building Floor, Seal All Asphalt Areas in Back Yard						
Contractor Mobilization/Demobilization	1	lump sum	$1,400	$1,400		Hart Crowser estimate based on similar projects.
Asphalt Repaving, incl. material and labor	14,860	SF	$1.40	$20,804		Assumes 2-inch thick asphalt overlay. Quote obtained by GGS.
Seal Building Concrete Floor, labor	30	hour	$10.00	$300		Assumes labor supplied by Calbag Metals to move stockpiles and apply sealant.
Concrete Sealant, material	41,415	SF	$0.13	$5,384		Quote obtained by GGS for Sealcoat.
Asphalt Sealant, material and labor	87,250	SF	$0.20	$17,450		Assumes all asphalt areas of Back Yard require sealant. Quote obtained by GGS.
Contingency (15%)				$6,801		
				Subtotal:	$52,139	
Common Elements (Table A-1)					$367,377	
Alternative 6 Total Costs with Common Elements					**$419,516**	
Alternative 7 - Repave All Asphalt Areas, Seal All Areas of Building Floor, Replace Concrete Surface in Tent Area						
Contractor Mobilization/Demobilization	1	lump sum	$1,700	$1,700		Hart Crowser estimate based on similar projects.
Asphalt Repaving, incl. material and labor	102,110	SF	$1.40	$142,954		Assumes 2-inch thick asphalt overlay. Quote obtained by GGS.
Seal Building Concrete Floor, labor	30	hour	$10.00	$300		Assumes labor supplied by Calbag Metals to move stockpiles and apply sealant.
Concrete Sealant, material	41,415	SF	$0.13	$5,384		Quote obtained by GGS for Sealcoat.
Removal of Existing Concrete	4,025	SF	$1.99	$8,010		Assumes 6-inch thick pavement. RS Means Heavy Construction Cost Data, 2008.
Recycling/Disposal of Old Concrete, incl. transporation	151	tons	$20	$3,019		Hart Crowser estimate based on similar projects.
Placement of New Concrete	447	SY	$27	$11,851		Assumes placement of 6-inch thick, unreinforced concrete. RS Means Heavy Construction Cost Data, 2008.
Contingency (15%)				$25,983		
				Subtotal:	$199,201	
Common Elements (Table A-1)					$367,377	
Alternative 7 Total Costs with Common Elements					**$566,578**	

Notes:
LF = linear feet
CY = cubic yard
SF = square feet
SY = square yards

4.2 Alternative 1 – No Action

4.2.1 Protectiveness

Alternative 1 would not be protective because it would not address areas of the site where PCB contamination has been identified for exterior asphalt and concrete surfaces, interior building concrete surfaces and in onsite stormwater catch basins. The existing system does not capture and treat all stormwater leaving the site and no further upgrades to the system would be made under Alternative 1. No stormwater sampling would be conducted as a post-remedy installation task. All monitoring wells would be decommissioned because no further groundwater monitoring would be conducted.

4.2.2 Effectiveness

Alternative 1 would not be considered effective because it will not address areas of PCB contamination in onsite exterior or interior asphalt and concrete surfaces. Alternative 1 would not be effective in preventing offsite migration of PCBs via the stormwater system.

4.2.3 Long-Term Reliability

No action would be taken under Alternative 1 with regard to offsite migration of PCB contamination therefore it would not be reliable in the long term to prevent offsite PCB contamination migration via the stormwater pathway.

4.2.4 Implementability

Alternative 1 is highly implementable as no actions would be taken to address areas of PCB contamination or offsite migration. The only action would be to decommission existing monitoring wells which would be considered highly implementable. Short term business disruption would be the least under this alternative and the work could be done during business or non-business hours.

4.2.5 Implementation Risk

The implementation risk for Alternative 1 is low and drives entirely from decommissioning existing monitoring wells. This work would be of relatively short duration and could be done to avoid busy times of business operation.

4.2.6 Reasonableness of Cost

The cost of Alternative 1 is the lowest of all the alternatives although no real environmental benefit will be achieved.

4.3 Alternative 2 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, no Treatment for Asphalt in the Back Yard, and no Treatment for the Building Concrete Floor

4.3.1 Protectiveness

Alternative 2 is somewhat protective because a portion of the exterior asphalt surfaces where concentrations of PCBs exceed cleanup levels would be repaved. However, other areas of the site where PCB concentrations exceed cleanup levels would not be addressed, including the building concrete floor.

4.3.2 Effectiveness

Alternative 2 is somewhat effective in addressing areas of PCB contaminated surfaces and preventing offsite migration of PCBs but does not address the building concrete floor, one of the most significant areas of PCB contamination.

4.3.3 Long-Term Reliability

Repaving asphalt surfaces on 25th Avenue and the tent area would provide durable surface treatment and provide long-term reliability. However there would be no treatment of the backyard asphalt or the building concrete floor so this alternative would not have long-term reliability in preventing offsite migration of PCB contamination via the stormwater pathway.

4.3.4 Implementability

Alternative 2 is highly implementable as the actions taken would use readily available materials and methods with only moderate disruption to onsite business operations. Paving would be implemented in the most accessible areas of the site.

4.3.5 Implementation Risk

Alternative 2 has a relatively low implementation risk where repaving asphalt would be done in the more accessible areas of 25th Avenue and the tent area. No actions would be taken to treat the backyard asphalt or the building concrete floor.

4.3.6 Reasonableness of Cost

Alternative 2 would the lowest cost of alternatives 2 through 7 because no treatment would occur in the backyard area or for the building concrete floor. Environmental benefits would be modest for this alternative as the exterior asphalt surfaces would be paved

4.4 Alternative 3 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, no Treatment for Asphalt in the Back Yard, and Seal Limited Areas of the Building Concrete Floor

4.4.1 Protectiveness

Alternative 3 is moderately protective because will implement sealing of limited areas of the building concrete floor in addition to repaving asphalt in NW 25th Avenue and the tent area, but will not implement treatment for the backyard asphalt. These actions will address most of the identified PCB contaminated areas.

4.4.2 Effectiveness

Alternative 3 is moderately effective in addressing surface areas with PCB contamination including limited sealing of the building concrete floor.

4.4.3 Long-Term Reliability

Overall, this Alternative 3 would have moderate long-term reliability in preventing offsite migration of PCBs via the stormwater pathway. Repaving of asphalt on NW 25th Avenue and in the tent area would have high long-term reliability by providing a durable resurfacing. There would be no treatment for the backyard asphalt area which would take no action to prevent offsite migration of PCBs although that area has only limited areas where PCBs are identified as exceeding cleanup levels. Sealing limited areas of the building concrete floor would be of low to moderate reliability at best because it is unknown how frequently the surfacing would need to be replaced as a result of equipment wear since it would be in areas of highest traffic.

4.4.4 Implementability

Alternative 3 would be moderately implementable. Repaving of NW 25th Avenue and the tent area would use readily available materials and methods in readily accessible areas with only moderate disruption to onsite business operations and would be highly implementable. There would be no treatment of asphalt surfaces in the backyard area which is also highly implementable. However, sealing limited areas of the building concrete floor is of low to moderate implementability because while the high traffic areas of the building concrete floor is relatively accessible there would be significant disruption of day-to-day business operations even though some of this work could be conducted during non-operation hours.

4.4.5 Implementation Risk

Alternative 3 would have moderate implementation risk because more of the work including limited sealing of the building concrete floor would be conducted in areas of high traffic, for longer periods of time and in the confined area of the building.

4.4.6 Reasonableness of Cost

The cost for Alternative 3 would be moderate and slightly higher than for Alternative 2,, as it would not include treatment of the backyard asphalt, and only limited areas of the building concrete floor with the highest traffic. Alternative 3 is considered of high cost reasonableness because while of moderate cost, it would provide the most environmental benefit while minimizing disruption of day-to-day business operations.

4.5 Alternative 4 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, Seal Targeted Areas of Asphalt in the Back Yard, and Seal Limited Areas of the Building Concrete Floor

4.5.1 Protectiveness

Alternative 4 is considered to be moderately protective because it addresses all areas of identified PCB contamination of exterior and interior surfaces. While only limited areas of the building concrete floor and targeted areas of the backyard asphalt would be sealed, these would be in the areas of highest traffic and where PCBs are identified as exceeding cleanup levels.

4.5.2 Effectiveness

Alternative 4 is considered moderately effective in reducing offsite migration of PCBs because is addresses all areas of identified PCB contamination of exterior and interior surfaces.

4.5.3 Long-Term Reliability

Alternative 4 has moderate long-term reliability because it combines use of repaving of asphalt in the NW 25th Avenue and tent areas, which are durable surfaces, with sealing targeted areas of backyard asphalt and the building concrete floor, which are in high traffic areas and the durability of the sealant, in particular for the building, are less reliable to unknown.

4.5.4 Implementability

Alternative 4 would be moderately implementable. Repaving of NW 25th Avenue and the tent area would use readily available materials and methods in readily accessible areas with only moderate disruption to onsite business operations and would be highly implementable. Sealing targeted areas of the backyard asphalt and limited areas of the building concrete floor is of low to moderate implementability. The backyard asphalt area is moderately accessible and the building concrete floor is less accessible, but both are in high traffic areas and there would be significant disruption of day-to-day business operations even though some of this work could be conducted during non-operation hours.

4.5.5 Implementation Risk

Alternative 4 would have moderate implementation risk because more of the work including limited sealing of targeted areas of the backyard asphalt and limited areas of the building concrete floor would be conducted in areas of high traffic, for longer periods of time and in the confined area of the building.

4.5.6 Reasonableness of Cost

The cost for Alternative 4 would be moderate and slightly higher than for Alternatives 2 and 3, and, would include repaving NW 25th Avenue and the tent area, sealing limited areas of the building concrete floor, and also sealing targeted areas of the backyard asphalt. The slightly higher cost for Alternative 4 (with the addition of sealing limited areas of the building concrete floor, as opposed to Alternative 3) may not provide an proportional increase in environmental benefit because the backyard has only limited areas of PCBs that exceed cleanup levels.

4.6 Alternative 5 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, Seal the Entire Asphalt Surface in the Back Yard, and no Treatment for the Building Concrete Floor

4.6.1 Protectiveness

Alternative 5 would be moderately protective because it addresses all of the areas of identified PCB contamination. However, while this alternative would seal all of the backyard area asphalt, it would take no action for the building concrete floor which has more significant concentrations of PCBs than the backyard area.

4.6.2 Effectiveness

This alternative would be of low to moderate effectiveness because while it addresses most of the areas of identified PCB contamination, it does not address any of the building concrete floor which is one of the most significant areas of PCB contamination.

4.6.3 Long-Term Reliability

Alternative 5 would have low to moderate long-term reliability to prevent offsite migration of PCBs via the stormwater pathway because it addresses most of the identified areas of PCB contamination except for the building concrete floor.

4.6.4 Implementability

Alternative 5 is moderately implementable. Repaving of NW 25th Avenue and the tent area would be done using common equipment and methods in areas that are relatively accessible. No action would be taken for the building concrete floor which would be highly implementable. However, sealing all of the backyard area would be of low to moderate implementability because it includes areas that are not now readily accessible and gaining access would cause some disruption to day-to-day operations. Some of the work to seal the backyard area could be done during non-operating hours but the work would need to be done over a longer period of time and therefore some operations disruption would likely occur.

4.6.5 Implementation Risk

Alternative 5 would have low to moderate implementation risk because much of the work would be accomplished in areas that are relatively accessible but also are areas of high traffic. No work would be done within the confined area of the building.

4.6.6 Reasonableness of Cost

The cost for Alternative 5 would be moderate and slightly higher than Alternatives 2 through 4. The cost reasonableness of Alternative 5 is also considered low to moderate because while the alternative addresses most of the identified areas of PCB contamination, the environmental benefit of reducing the offsite migration of PCB contamination is not equal to the additional cost of sealing all of the backyard area because no action would be taken for the building concrete floor where highest PCB contamination has been identified.

4.7 Alternative 6 – Repave Asphalt in the 25th Avenue Area, Repave Asphalt in the Tent Area, Seal the Entire Asphalt Surface in the Back yard, and Seal the Entire Building Concrete Floor

4.7.1 Protectiveness

Alternative 6 would be highly protective because it addresses all areas of identified PCB contamination, and because it would seal the entire backyard asphalt and all of the building concrete floor.

4.7.2 Effectiveness

Alternative 6 would be highly effective as it would repave or seal all exterior and interior surfaces where PCB contamination has been identified.

4.7.3 Long-Term Reliability

The overall long-term reliability of Alternative 6 would be low to moderate. Repaving NW 25th Avenue and the tent area would provide a durable asphalt surface with a high reliability, However, sealing the backyard asphalt area would likely be only moderately reliable and sealing the building concrete floor would at best be of low to unknown reliability because of anticipated wear by heavy equipment resulting in the need for replacement of the sealant.

4.7.4 Implementability

Alternative 6 is of low implementability. Repaving NW 25th Avenue and the tent area would be done using common equipment and methods in areas that are relatively accessible. However, sealing all of the backyard area and the building concrete floor would be of low implementability because it includes areas that are not now readily accessible and gaining access would cause significant disruption to day-to-day operations. Some of the work in the backyard and building areas could be done during non-operating hours but the work would need to be done over a longer period of time and in areas of constant traffic therefore significant to severe operations disruption is expected to occur.

4.7.5 Implementation Risk

Implementation risk for Alternative 6 would be high because most of the work would need to be done over a longer period of time, in areas of higher traffic.

4.7.6 Reasonableness of Cost

The cost for Alternative 6 would be moderate to higher than Alternatives 2 through 5 because it includes sealing all of the backyard area and the entire building concrete floor. The cost reasonableness of Alternative 6 would be low because the increased cost of sealing all of the backyard asphalt and the entire building concrete floor would not necessarily bring a commensurate increased environmental benefit for reducing offsite migration of PCB contamination given the unknown reliability of sealing the building concrete floor in areas of high traffic by heavy equipment. Sealant for the backyard asphalt may be of higher reliability than sealant for the building concrete floor, but would still be expected to be worn by heavy equipment traffic.

4.8 Alternative 7 – Repave All Asphalt Surfaces and Seal the Entire Building Concrete Floor

4.8.1 Protectiveness

Alternative 7 would be highly protective because it addresses all areas of identified PCB contamination by repaving all exterior asphalt surfaces and sealing the entire building concrete floor.

4.8.2 Effectiveness

Alternative 7 would be highly effective as it would address all areas where PCB contamination has been identified by repaving all exterior asphalt surfaces and sealing the entire building concrete floor.

4.8.3 Long-Term Reliability

The long-term reliability of Alternative 7 would be moderate. Repaving the entire exterior asphalt surface would provide a durable surface with high long-term reliability. However, sealing the building concrete floor would at best be of low to unknown reliability because of anticipated wear by heavy equipment resulting in the need for replacement of the sealant, even though the sealant in areas of lower traffic would likely remain intact for a longer time.

4.8.4 Implementability

Alternative 7 is of low implementability. Repaving all exterior asphalt surfaces would be done using common equipment and methods in areas that are relatively accessible. However, repaving all of the exterior asphalt surfaces and sealing the entire building concrete floor would be of low implementability because it includes areas that are not now readily accessible and gaining access would cause significant disruption to day-to-day operations. Much of the repaving work and some of the building sealing work could be done during non-operating hours but the work would need to be done over a longer period of time, and most of the building sealing work would be done in areas of constant traffic therefore significant to severe operations disruption is expected to occur.

4.8.5 Implementation Risk

Implementation risk for Alternative 7 would be high because most of the work would need to be done over a longer period of time, in areas of higher traffic.

4.8.6 Reasonableness of Cost

The cost for Alternative 7 would be the highest of all Alternatives except Alternative 1 because it includes repaving all of the exterior asphalt surfaces and sealing the entire building concrete floor. The cost reasonableness of Alternative 7 would be low because the increased cost of repaving all of the exterior asphalt surfaces and sealing the entire building concrete floor would not necessarily bring a commensurate increased environmental benefit for reducing offsite migration of PCB contamination given the unknown reliability of sealing the building concrete floor in areas of high traffic by heavy equipment. Repaving all exterior asphalt surfaces would be of higher reliability than sealant for the building concrete floor.

5 COMPARISON OF REMEDIAL ALTERNATIVES

The proposed alternatives were compared to each other in terms of their protectiveness and the five balancing criteria for effectiveness, long-term reliability, implementability, implementation risk, and reasonableness of cost. The results of the comparative analysis are presented on Table 5.

5.1 Protectiveness

Alt 1 No Action is not protective because no action would be taken to address identified areas of PCB contamination or to prevent offsite migration of PCB via the stormwater pathway. No upgrades would be made to the onsite stormwater system as required by DEQ. Alternative 2 is more protective than alternative 1, because actions would be taken to address some areas of identified PCB contamination, but no action would be taken for the backyard asphalt and the building concrete floor. Alternatives 3 and 5 are more protective than alternative 2 because they address more of the identified PCB contaminated areas although alternative 5 takes no action for the building concrete floor and alternative 3 takes no action for the backyard asphalt. Alternatives 4, 6 and 7 are considered the most protective because they take action for most or all of the identified areas of PCB contamination, with Alternatives 6 and 7 more protective than Alternative 4 because they address all of the areas of PCB contamination.

5.2 Effectiveness

Alternative 1 is not considered effective because no actions would be taken to prevent offsite migration of PCB contamination via the stormwater pathway. Alternatives 2 and 5 are more effective than alternative 1 but do not take action for the building concrete floor, one of the most significant areas of PCB contamination. Alternative 5 is more protective than Alternative 2 because it seals the entire backyard asphalt area, although the backyard has only limited areas where PCBs exceed cleanup levels. Alternatives 3 and 4 are more effective than alternatives 2 and 5 because they address most of the identified areas of PCB contamination including the building concrete floor. Alternatives 6 and 7 are considered the most effective because they fully treat all of the exterior asphalt surfaces and the entire building concrete floor.

5.3 Long-Term Reliability

Alternative 1 is not reliable long-term as no actions would be taken to prevent offsite migration of PCB contamination via the stormwater pathway. Alternatives 5 and 6 are considered similar in low to moderate long-term reliability but are only slightly more reliable than alternative 1. These alternatives would seal limited areas or the entire building concrete floor, or seal targeted areas or all of the asphalt in the backyard, but areas of highest traffic are used by heavy equipment that will damage the applied treatment and likely require replacement of the treatment at some regularity.

Alternatives 2 through 4 and 7 are considered to have the most long-term reliability with respect to the type and extent of treatment that would be conducted. Alternative 2 does not treat the backyard asphalt or the building concrete floor, but repaving of 25th Avenue and the tent area would provide a durable surface of high long-term reliability. Alternative 3 also repaves NW 25th Avenue and the tent area, and in addition seals the high traffic areas of the building concrete floor. Alternative 4 seals targeted areas in the backyard and limited areas of the building concrete floor. Application of sealant to the backyard area may be of moderate long-term reliability and sealant to the building concrete floor is of low or unknown reliability because of potential wear from heavy equipment in these areas of high traffic.

Alternative 7 treats the entire building concrete floor and repaves all exterior asphalt surfaces. Repaving the backyard asphalt would be more reliable than sealant treatment, and even though heavy equipment would damage the sealant for the building concrete floor other areas subject to less heavy equipment damage would remain sealed for longer periods of time.

5.4 Implementability

Alternatives 1 and 2 are considered highly implementable as either no action except decommissioning of monitoring wells or repaving asphalt in relatively accessible areas would be done. Some short term disruption of day-to-day operations would be likely with these two alternatives but some of the work could be conducted during non-operating hours and would occur over a relatively short period of time. Alternatives 3 through 5 are considered of relatively equal implementability and slightly less implementable than Alternatives 1 and 2. Each of Alternatives 3 through 5 would treat areas of the site that are relatively accessible, as well as some areas that will cause more disruption of day-to-day operations than for alternatives 1 and 2. Alternatives 6 and 7 are considered the least implementable because during treatment day-to-day operations because the work would occur over longer periods of time for a site with limited alternate storage areas and high turnover of metal recyclables. All seven alternatives would use readily available materials, equipment and methods for implementation.

5.5 Implementation Risk

Alternative 1 would have the lowest potential implementation risk as work can be done during non-operation hours and would be of relatively short duration. Alternatives 2 and 5 would be considered of similar moderate implementation risk as they would be conducting treatment in more areas of heavy equipment traffic, but would not conduct treatment within the warehouse building. Alternatives 2 and 5 would be conducting treatment for longer periods of time than alternative 1, and some of the work might be able to be accomplished during non-operating hours. Alternatives 3 and 4 would have a slightly higher implementation risk than alternatives 2 and 5 because some treatment would also be conducted within the warehouse building and the treatment would be for longer periods of time than alternative 1, 2 and 5 even though some of the work might be able to be accomplished during non-operating hours. Alternatives 6 and 7 would have the highest implementation risk because nearly all areas of the site would be addressed including areas of high traffic for heavy equipment for likely the longest periods of time, even though some of the work might be able to be accomplished during non-operating hours.

5.6 Reasonableness of Cost

Alternative 1 is the lowest cost alternative but is not considered cost reasonable since no benefit would be derived toward the remedial goal of preventing offsite migration of PCB contamination via the stormwater pathway. Alternatives 6 and 7 would be the highest cost alternatives, but the additional short term cost of sealing the entire building concrete floor and backyard asphalt, combined with the potential additional costs of long-term maintenance or replacement of the surface sealants, outweighs the benefit of complete surface sealing. Alternative 7 is slightly more cost reasonable than alternatives 1 and 6 because the repaving of all asphalt surfaces would be more effective in preventing offsite migration of PCB contamination and would be a more durable surface than asphalt sealing.

Alternatives 2 and 5 are considered similar in cost reasonableness, and slightly more cost reasonable than alternatives 1, 6 or 7. No treatment would be applied to the building concrete floor in Alternatives 2 and 5 which reduces the overall cost for treatment but provides no treatment benefit for the one of the most significant areas of PCB contamination.

Alternatives 3 and 4 are considered the most cost reasonable of the proposed alternatives because they both seal limited areas of the building concrete floor which is identified as the most significant area of PCB contamination. Alternative 3 does not treat the backyard area, whereas Alternative 4 seals targeted areas in the backyard. The cost benefit tradeoff of Alternative 3 over 4 is that the cost of continued application of sealant in the high traffic areas of the building concrete floor would offset the cost of sealing the entire backyard area asphalt where only limited areas of PCB contamination exceeds cleanup levels.

Table 5 – Comparative Analysis Proposed Remedial Alternatives

COMPARATIVE ANALYSIS OF PROPOSED REMEDIAL ALTERNATIVES WITH SUMMARY OVERALL EVALUATION SCORE							
	REMEDIAL ALTERNATIVES						
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Remedial Alternative Elements							
Abandon All Monitoring Wells	x						
Repave 25th Avenue Asphalt		x	x	x	x	x	
Repave Tent Area Asphalt		x	x	x	x	x	
Repave All Asphalt							x
No Treatment Backyard Asphalt		x	x				
Seal Targeted Areas of Backyard Asphalt				x			
Seal All Backyard Asphalt					x	x	
No Treatment of Building Concrete Floor		x			x		
Seal Limited Areas of Building Concrete Floor			x	x			
Seal Entire Building Concrete Floor						x	x
Remedial Alternative Evaluation Criteria							
Protectiveness	0	2	3	4	3	4	4
Effectiveness	0	2	3	3	2	4	4
Long-Term Reliability	0	3	3	3	2	2	3
Implementability	4	4	3	3	3	1	1
Implementation Risk	4	3	2	2	2	1	1
Reasonableness of Cost	0	2	4	4	2	1	1
Comparative Analysis							
Overall Score	8	16	18	19	14	13	14

Notes:
1. “x” in cell indicates element is part of remedial alternative
2. Comparative evaluation range 0 (least desirable) to 4 (most desirable). A score of 0 is least: protective, effective, long-term reliable, implementable, risk from implementation, and cost reasonable.

6 RECOMMENDED REMEDIAL ALTERNATIVE

The recommended alternative is Alternative 3. Alternative 3 includes implementing all of the common elements, repaving asphalt surfaces in NW 25th Avenue and in the tent area, and sealing limited areas of the building concrete floor. Alternative 3 would not include treatment of the backyard area asphalt surface.

This alternative is considered the most cost effective and of high effectiveness in addressing PCB impacted surface areas while minimizing implementation risk and overall disruption to the day-to-day operations of Calbag metals recycling. Alternative 3 scored second highest to Alternative 4 that included sealing targeted areas of the backyard asphalt surface, however, the higher increment of cost for Alternative 4 to seal targeted areas of backyard asphalt is not considered warranted where only limited areas of the backyard asphalt surface PCB concentrations exceed cleanup criteria.

The initial steps in implementing Alternative 3 would be to obtain all necessary permits for upgrading the stormwater system that would include replacement of catch basin CB-5, abandonment of old stormwater conveyance lines, installation of a new and second Stormwater RX system to treat stormwater from the new CB-5, installation of new stormwater conveyance lines from CB-5 to the new RX installation, and new stormwater lines from the new RX system to a manhole in adjacent NW 25th Street. Upgrading the stormwater system would require City of Portland permits and oversight and the work would be conducted in compliance with the City's Stormwater Management Manual and Portland Bureau of Transportation requirements.

Permits required for the stormwater upgrade would include a Commercial Building Permit, Sewer Connection Permit, Public Works Permit and an Encroachment Permit. It is anticipated that all of these permits would be obtained in a coordinated action with the City of Portland. The permitting process is estimated to required 4 to 6 months to complete.

Cleaning of all surfaces would be accomplished in stages, with cleaning of surfaces that would be treated occurring first, such as NW 25th Avenue, the tent area and the building concrete floor, then cleaning of all other areas once repaving, stormwater upgrades and tent area concrete replacement is complete.

While the stormwater permitting is ongoing, other elements of the recommended alternative can be implemented, including repaving of NW 25th Avenue and the tent area. Replacement of the concrete in the tent area would need to be implemented after upgrade of the stormwater system since the concrete replacement would occur in the same area where stormwater conveyance lines would be abandoned and replaced.

Sealing limited areas of the building concrete floor may be implemented prior to upgrade of the stormwater system, when day-to-day business operations are not being disrupted by other remedy implementation activities.

Once active repaving, sealing, stormwater upgrades and tent area concrete replacement have been completed, then stormwater sampling would be initiated. The purpose of the stormwater sampling would be to evaluate the presence of PCBs in stormwater and the effectiveness of the implemented alternative. A stormwater sampling plan would be prepared to collect sufficient data to evaluate the implemented remedy.

A best management practice manual would be prepared, that would incorporate and update the existing document. The updated best management practice manual would be prepared once design of the stormwater system upgrade and asphalt and concrete surface treatments are complete. The updated best management practice manual would be consistent with City of Portland and Portland Bureau of Transportation requirements and would be implemented as soon as practicable.

7 REFERENCES

Blue Mountain Environmental Consulting, Phase I Environmental Site Assessment Report for 2495 Nicolai LLC, Portland, OR, August 2008.

City of Portland Bureau of Environmental Services, Stormwater Management Manual Revision #3, September 2004.

GeoPro Geologic Services LLC with Blue Mountain Environmental Consulting Inc., Environmental Site Assessment Report for Calbag Metals Co., 2495 NW Nicolai St., Portland, OR, May 2009.

GeoPro Geologic Services LLC and Blue Mountain Environmental Consulting, Inc., Stormwater Catch Basins Sediment Sampling Report for Calbag Facility, 2495 Nicolai Street, Portland, Oregon, May 2009.

GeoPro Geologic Services LLC, Stormwater Catch Basins Cleanout Letter Report for Calbag Metals Company, July 2009.

GeoPro Geologic Services LLC, Sediment Sampling for PCBs Roofs and NW 25th Ave. Report for Calbag Metals Company, August 2009.

GeoPro Geologic Services LLC, PCBs Sampling Asphalt and Soil Report for Calbag Metals Company, November 2009.

GeoPro Geologic Services LLC, PCB Surface Sampling (Asphalt and Concrete) for Calbag Metals Company, January 2010.

GeoPro Geologic Services LLC, PCB Surface Washing Pilot Study Report, Calbag Metals Co. Facility, for Oregon Department of Environmental Quality, September 2010.

Oregon Environmental Quality Commission, Oregon's Hazardous Substance Remedial Action Rules, Oregon Administrative Rules, Chapter 340, Division 122, adopted 1997.

Oregon Department of Environmental Quality, Guidance for Conducting Feasibility Studies, July 1998.

8 LIMITATIONS

This report has been prepared for use by the Oregon Department of Environmental Quality and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Oregon Department of Environmental Quality should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

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Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understood that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques, does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not been discovered at the time of this report or in the future. This report should not be construed as presenting a value to either the Site or the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

Respectfully submitted,

Richard C. Kent, R.G.
GeoPro LLC

Figure 1 – Project Location

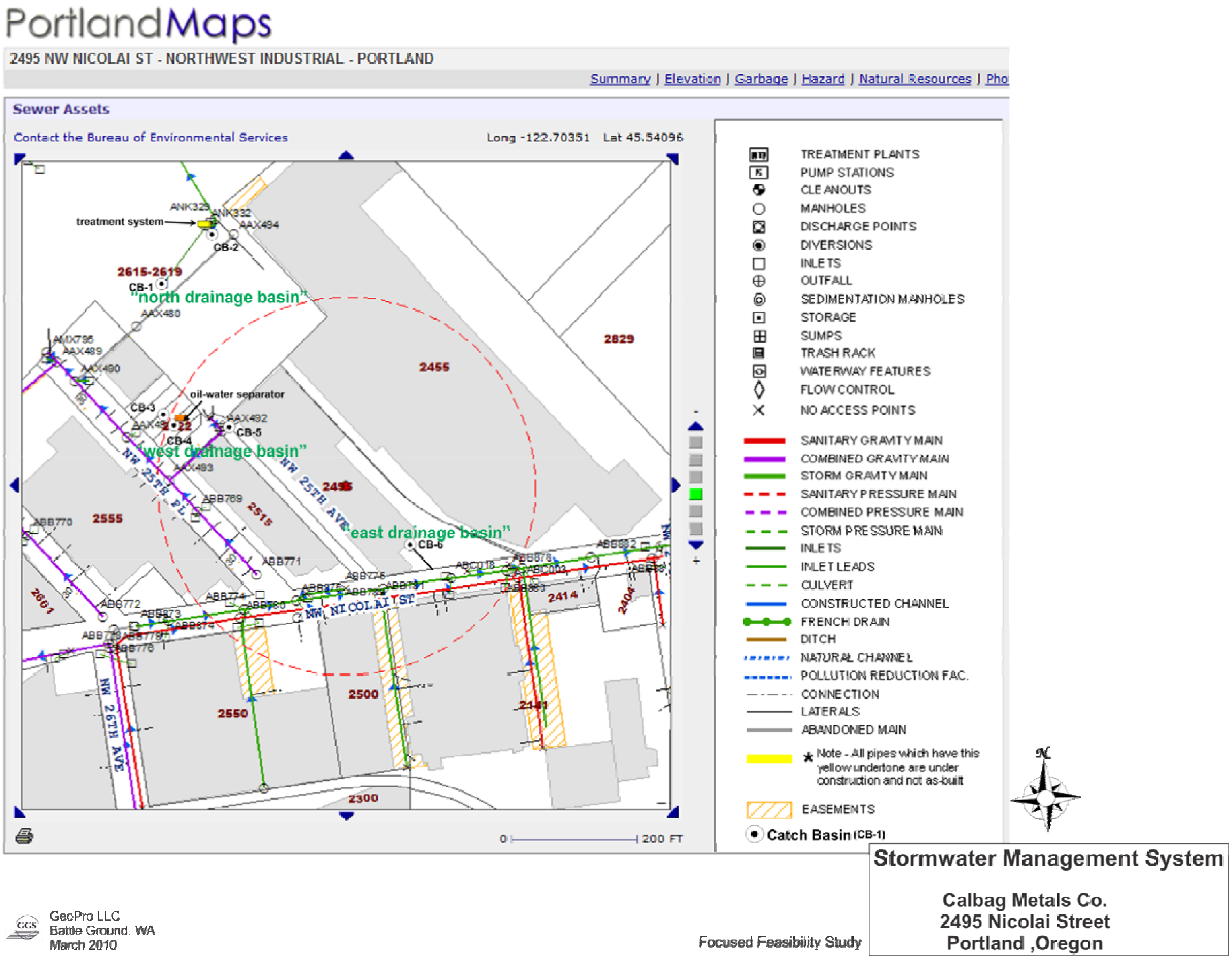


Figure 2 – Stormwater Management System Map

Figure 3 – Remediation Areas Map

9 APPENDICES

Appendix A
PCB Surface Washing Pilot Study Report

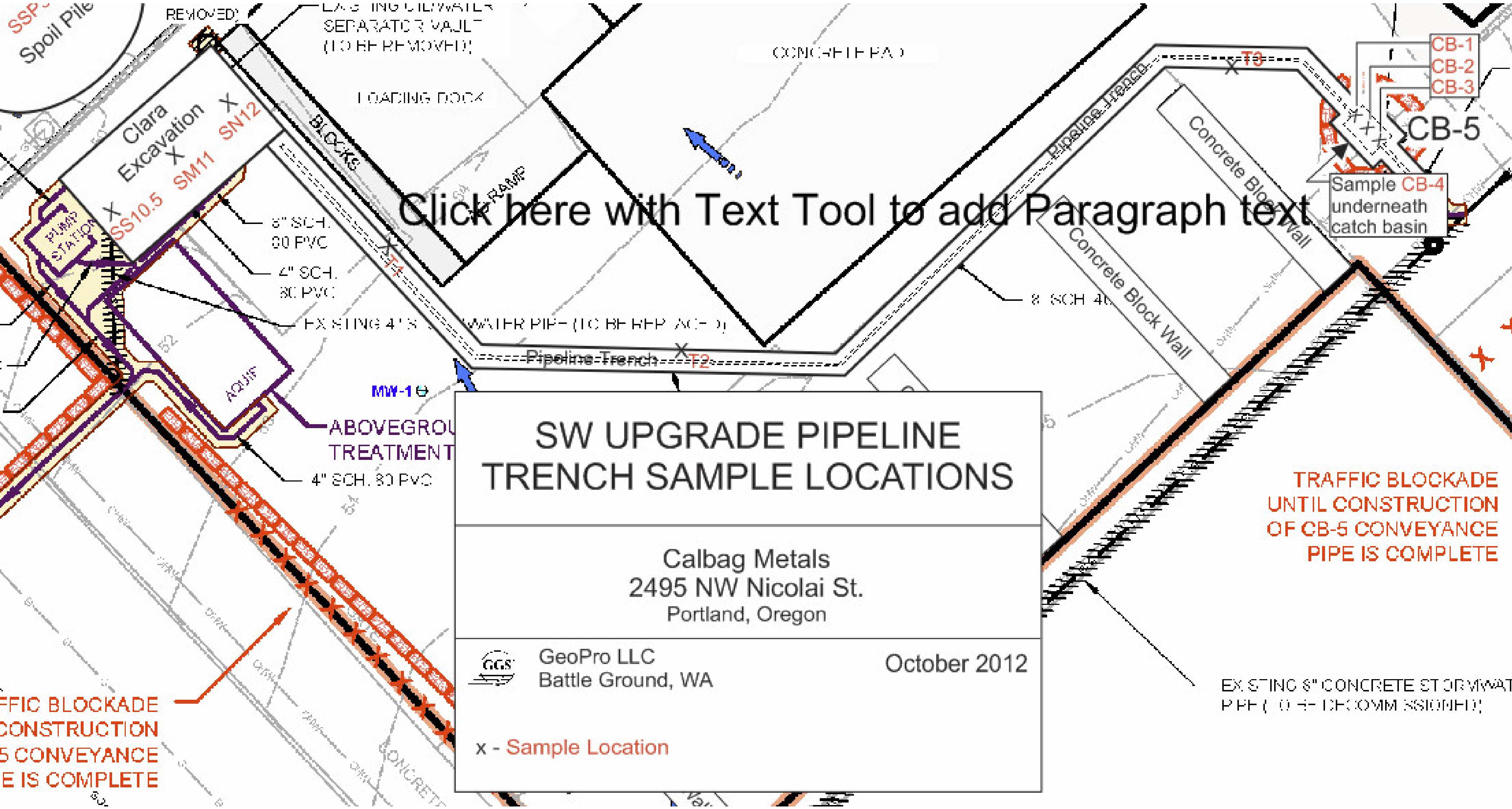
Appendix K
Soil Sample Laboratory Reports
Stormwater System Upgrade Trench and Excavation
2495 NW Nicolai Street, August 2012

Laboratory Analyses

Calbag Metals Company

2495 NW Nicolai Street, Portland, Oregon

Construction of Stormwater Treatment System and Lines


SW UPGRADE PIPELINE
TRENCH SAMPLE LOCATIONS
Calbag Metals
2495 NW Nicolai St.
Portland, Oregon
GeoPro LLC
Battle Ground, WA
October 2012
x - Sample Location
Click here with Text Tool to add Paragraph text
Spoil Pile
Clara Excavation
SN12
SM11
SS10.5
PUMP STATION
BLOCKS
RAMP
LOADING DOCK
CONCRETE PAD
Pipeline Trench
T1
T2
T3
Concrete Block Wall
Concrete Block Wall
CB-1
CB-2
CB-3
CB-5
Sample CB-4 underneath catch basin
MW-1
ABOVEGROU
TREATMENT
AQUIF
8" SCH. 80 PVC
4" SCH. 80 PVC
4" SCH. 80 PVC
TRAFFIC BLOCKADE UNTIL CONSTRUCTION OF CB-5 CONVEYANCE PIPE IS COMPLETE
FFIC BLOCKADE
CONSTRUCTION
5 CONVEYANCE
E IS COMPLETE

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-5509-1
TestAmerica Sample Delivery Group: 080820
Client Project/Site: Calbag Stormwater Upgrade

For:
GeoPro Geologic Services
PO BOX 26
Battle Ground, Washington 98604

Attn: Richard Kent

Authorized for release by:
8/22/2012 3:19:20 PM

Peggy Siegfried
Project Manager I
peggy.siegfried@testamericainc.com

1 2 3 4 5 6 7 8 9 10 11 12

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Sample Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-5509-1	SS10.5	Solid	08/03/12 14:35	08/03/12 15:47
250-5509-2	SM11	Solid	08/03/12 14:32	08/03/12 15:47
250-5509-3	SN12	Solid	08/03/12 14:30	08/03/12 15:47
250-5509-4	SSP3.5	Solid	08/03/12 14:45	08/03/12 15:47

Case Narrative

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Job ID: 250-5509-1

Laboratory: TestAmerica Portland

Narrative

Job Narrative
250-5509-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2012 3:47 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.1º C.

GC/MS Semi VOA
No analytical or quality issues were noted.

GC Semi VOA
No analytical or quality issues were noted.

Metals
Method(s) 7471A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for the following sample associated with batch 8490 were outside control limits: (250-5297-1 MS), (250-5297-1 MSD), North Drain (250-5297-1). The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Narrative

Job Narrative
250-5509-2

Comments
No additional comments.

Receipt
The samples were received on 8/3/2012 3:47 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.1º C.

GC/MS Semi VOA
Method(s) 8270C: Analytical batch 117951

The laboratory control sample (LCS) and / or the laboratory control sample duplicate (LCSD) for prep batch 117543 recovered low for the following analytes: 1,4-dichlorobenzene, hexachlorobutadiene and hexachloroethane. Re-analysis of the LCS/LCSD confirmed the low recovery. Data have been qualified and reported per client request.

Method(s) 8270C: Analytical batch 117951, prep batch 117543

Surrogate recovery for the following sample(s) was outside the lower acceptance limits: (MB 580-117453/1-C), SM11 (250-5509-2), SS10.5 (250-5509-1), SSP3.5 (250-5509-4). The results have been qualified and reported per client request.

No other analytical or quality issues were noted.

General Chemistry
Method(s) 1311: Insufficient sample was provided to perform the leaching procedure with the required 100g for the following sample(s): SS10.5 (250-5509-1). The volume of leaching fluid was adjusted proportionally to maintain a 20:1 ratio of leaching fluid to weight of sample. Reporting limits (RLs) are not affected.

Job ID: 250-5509-1 (Continued)

Laboratory: TestAmerica Portland (Continued)

No other analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD exceeds the control limits
X	Surrogate is outside control limits

GC Semi VOA

Qualifier	Qualifier Description
F	RPD of the MS and MSD exceeds the control limits

Metals

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: SS10.5 | **Lab Sample ID: 250-5509-1**
Date Collected: 08/03/12 14:35 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 72.6**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Bis(2-ethylhexyl) phthalate	ND		37		ug/Kg	☼	08/06/12 11:50	08/07/12 12:53	1
Butyl benzyl phthalate	ND		37		ug/Kg	☼	08/06/12 11:50	08/07/12 12:53	1
2-Methylnaphthalene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Diethyl phthalate	ND		37		ug/Kg	☼	08/06/12 11:50	08/07/12 12:53	1
Acenaphthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Dimethyl phthalate	ND		37		ug/Kg	☼	08/06/12 11:50	08/07/12 12:53	1
Acenaphthylene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Di-n-butyl phthalate	ND		37		ug/Kg	☼	08/06/12 11:50	08/07/12 12:53	1
Anthracene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Di-n-octyl phthalate	ND		37		ug/Kg	☼	08/06/12 11:50	08/07/12 12:53	1
Benzo[a]anthracene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Benzo[a]pyrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Benzo[b]fluoranthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Benzo[g,h,i]perylene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Benzo[k]fluoranthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Chrysene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Dibenz(a,h)anthracene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Fluoranthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Fluorene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Indeno[1,2,3-cd]pyrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Naphthalene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Phenanthrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1
Pyrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*61*		*40 - 145*	*08/06/12 11:50*	*08/07/12 15:55*	*1*
p-Terphenyl-d14 (Surr)	*60*		*10 - 150*	*08/06/12 11:50*	*08/07/12 12:53*	*1*
2-Fluorobiphenyl (Surr)	*63*		*10 - 150*	*08/06/12 11:50*	*08/07/12 12:53*	*1*
Fluorene-d10 (Surr)	*48*		*25 - 125*	*08/06/12 11:50*	*08/07/12 15:55*	*1*
Pyrene-d10 (Surr)	*65*		*40 - 140*	*08/06/12 11:50*	*08/07/12 15:55*	*1*

Client Sample ID: SM11 | **Lab Sample ID: 250-5509-2**
Date Collected: 08/03/12 14:32 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 74.3**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Bis(2-ethylhexyl) phthalate	ND		36		ug/Kg	☼	08/06/12 11:50	08/07/12 13:17	1
Butyl benzyl phthalate	ND		36		ug/Kg	☼	08/06/12 11:50	08/07/12 13:17	1
2-Methylnaphthalene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Diethyl phthalate	ND		36		ug/Kg	☼	08/06/12 11:50	08/07/12 13:17	1
Acenaphthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Dimethyl phthalate	ND		36		ug/Kg	☼	08/06/12 11:50	08/07/12 13:17	1
Acenaphthylene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Di-n-butyl phthalate	ND		36		ug/Kg	☼	08/06/12 11:50	08/07/12 13:17	1
Anthracene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Di-n-octyl phthalate	ND		36		ug/Kg	☼	08/06/12 11:50	08/07/12 13:17	1
Benzo[a]anthracene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Benzo[a]pyrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Benzo[b]fluoranthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Benzo[g,h,i]perylene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: SM11 — **Lab Sample ID: 250-5509-2**
Date Collected: 08/03/12 14:32 — **Matrix: Solid**
Date Received: 08/03/12 15:47 — **Percent Solids: 74.3**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Chrysene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Dibenz(a,h)anthracene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Fluoranthene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Fluorene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Indeno[1,2,3-cd]pyrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Naphthalene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Phenanthrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1
Pyrene	ND		18		ug/Kg	☼	08/06/12 11:50	08/07/12 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*66*		*40 - 145*	*08/06/12 11:50*	*08/07/12 16:25*	*1*
p-Terphenyl-d14 (Surr)	*58*		*10 - 150*	*08/06/12 11:50*	*08/07/12 13:17*	*1*
2-Fluorobiphenyl (Surr)	*64*		*10 - 150*	*08/06/12 11:50*	*08/07/12 13:17*	*1*
Fluorene-d10 (Surr)	*59*		*25 - 125*	*08/06/12 11:50*	*08/07/12 16:25*	*1*
Pyrene-d10 (Surr)	*70*		*40 - 140*	*08/06/12 11:50*	*08/07/12 16:25*	*1*

Client Sample ID: SN12 — **Lab Sample ID: 250-5509-3**
Date Collected: 08/03/12 14:30 — **Matrix: Solid**
Date Received: 08/03/12 15:47 — **Percent Solids: 87.7**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Bis(2-ethylhexyl) phthalate	ND		30		ug/Kg	☼	08/06/12 11:50	08/07/12 13:41	1
Butyl benzyl phthalate	ND		30		ug/Kg	☼	08/06/12 11:50	08/07/12 13:41	1
2-Methylnaphthalene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Diethyl phthalate	ND		30		ug/Kg	☼	08/06/12 11:50	08/07/12 13:41	1
Acenaphthene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Dimethyl phthalate	ND		30		ug/Kg	☼	08/06/12 11:50	08/07/12 13:41	1
Acenaphthylene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Di-n-butyl phthalate	ND		30		ug/Kg	☼	08/06/12 11:50	08/07/12 13:41	1
Anthracene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Di-n-octyl phthalate	ND		30		ug/Kg	☼	08/06/12 11:50	08/07/12 13:41	1
Benzo[a]anthracene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Benzo[a]pyrene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Benzo[b]fluoranthene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Benzo[g,h,i]perylene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Benzo[k]fluoranthene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Chrysene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Dibenz(a,h)anthracene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Fluoranthene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Fluorene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Indeno[1,2,3-cd]pyrene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Naphthalene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Phenanthrene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1
Pyrene	ND		15		ug/Kg	☼	08/06/12 11:50	08/07/12 16:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*71*		*40 - 145*	*08/06/12 11:50*	*08/07/12 16:54*	*1*
p-Terphenyl-d14 (Surr)	*67*		*10 - 150*	*08/06/12 11:50*	*08/07/12 13:41*	*1*
2-Fluorobiphenyl (Surr)	*55*		*10 - 150*	*08/06/12 11:50*	*08/07/12 13:41*	*1*
Fluorene-d10 (Surr)	*54*		*25 - 125*	*08/06/12 11:50*	*08/07/12 16:54*	*1*
Pyrene-d10 (Surr)	*73*		*40 - 140*	*08/06/12 11:50*	*08/07/12 16:54*	*1*

Client: GeoPro Geologic Services | TestAmerica Job ID: 250-5509-1
Project/Site: Calbag Stormwater Upgrade | SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: SSP3.5 | **Lab Sample ID: 250-5509-4**
Date Collected: 08/03/12 14:45 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 79.8**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Bis(2-ethylhexyl) phthalate	ND		33		ug/Kg	☼	08/06/12 11:50	08/07/12 14:05	1
Butyl benzyl phthalate	ND		33		ug/Kg	☼	08/06/12 11:50	08/07/12 14:05	1
2-Methylnaphthalene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Diethyl phthalate	ND		33		ug/Kg	☼	08/06/12 11:50	08/07/12 14:05	1
Acenaphthene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Dimethyl phthalate	ND		33		ug/Kg	☼	08/06/12 11:50	08/07/12 14:05	1
Acenaphthylene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Di-n-butyl phthalate	ND		33		ug/Kg	☼	08/06/12 11:50	08/07/12 14:05	1
Anthracene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Di-n-octyl phthalate	ND		33		ug/Kg	☼	08/06/12 11:50	08/07/12 14:05	1
Benzo[a]anthracene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Benzo[a]pyrene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Benzo[b]fluoranthene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Benzo[g,h,i]perylene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Benzo[k]fluoranthene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Chrysene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Dibenz(a,h)anthracene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Fluoranthene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Fluorene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Indeno[1,2,3-cd]pyrene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Naphthalene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Phenanthrene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1
Pyrene	ND		17		ug/Kg	☼	08/06/12 11:50	08/07/12 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*71*		*40 - 145*	*08/06/12 11:50*	*08/07/12 17:24*	*1*
p-Terphenyl-d14 (Surr)	*69*		*10 - 150*	*08/06/12 11:50*	*08/07/12 14:05*	*1*
2-Fluorobiphenyl (Surr)	*64*		*10 - 150*	*08/06/12 11:50*	*08/07/12 14:05*	*1*
Fluorene-d10 (Surr)	*62*		*25 - 125*	*08/06/12 11:50*	*08/07/12 17:24*	*1*
Pyrene-d10 (Surr)	*74*		*40 - 140*	*08/06/12 11:50*	*08/07/12 17:24*	*1*

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8270C - Semivolatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: SS10.5
Date Collected: 08/03/12 14:35
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND	*	2.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
2-Methylphenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
3 & 4 Methylphenol	ND		4.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
Hexachloroethane	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
Nitrobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
Hexachlorobutadiene	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
2,4,6-Trichlorophenol	ND		3.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
2,4,5-Trichlorophenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
2,4-Dinitrotoluene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
Hexachlorobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 17:52	1
Pentachlorophenol	ND		3.5		ug/L		08/13/12 15:10	08/19/12 17:52	1
Pyridine	ND		10		ug/L		08/13/12 15:10	08/19/12 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*60*		*44 - 148*	*08/13/12 15:10*	*08/19/12 17:52*	*1*
Phenol-d5	*89*		*33 - 147*	*08/13/12 15:10*	*08/19/12 17:52*	*1*
Nitrobenzene-d5	*73*		*49 - 154*	*08/13/12 15:10*	*08/19/12 17:52*	*1*
2-Fluorobiphenyl	*41*	*X*	*44 - 157*	*08/13/12 15:10*	*08/19/12 17:52*	*1*
2,4,6-Tribromophenol	*82*		*47 - 158*	*08/13/12 15:10*	*08/19/12 17:52*	*1*
Terphenyl-d14	*82*		*27 - 177*	*08/13/12 15:10*	*08/19/12 17:52*	*1*

Client Sample ID: SM11
Date Collected: 08/03/12 14:32
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND	*	2.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
2-Methylphenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
3 & 4 Methylphenol	ND		4.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
Hexachloroethane	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
Nitrobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
Hexachlorobutadiene	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
2,4,6-Trichlorophenol	ND		3.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
2,4,5-Trichlorophenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
2,4-Dinitrotoluene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
Hexachlorobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:14	1
Pentachlorophenol	ND		3.5		ug/L		08/13/12 15:10	08/19/12 18:14	1
Pyridine	ND		10		ug/L		08/13/12 15:10	08/19/12 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*77*		*44 - 148*	*08/13/12 15:10*	*08/19/12 18:14*	*1*
Phenol-d5	*87*		*33 - 147*	*08/13/12 15:10*	*08/19/12 18:14*	*1*
Nitrobenzene-d5	*71*		*49 - 154*	*08/13/12 15:10*	*08/19/12 18:14*	*1*
2-Fluorobiphenyl	*31*	*X*	*44 - 157*	*08/13/12 15:10*	*08/19/12 18:14*	*1*
2,4,6-Tribromophenol	*82*		*47 - 158*	*08/13/12 15:10*	*08/19/12 18:14*	*1*
Terphenyl-d14	*82*		*27 - 177*	*08/13/12 15:10*	*08/19/12 18:14*	*1*

Client Sample ID: SN12
Date Collected: 08/03/12 14:30
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND	*	2.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
2-Methylphenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:36	1

1 2 3 4 5 6 7 8 9 10 11 12

Method: 8270C - Semivolatile Organic Compounds (GC/MS) - TCLP (Continued)

Client Sample ID: SN12
Date Collected: 08/03/12 14:30
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3 & 4 Methylphenol	ND		4.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
Hexachloroethane	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
Nitrobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
Hexachlorobutadiene	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
2,4,6-Trichlorophenol	ND		3.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
2,4,5-Trichlorophenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
2,4-Dinitrotoluene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
Hexachlorobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:36	1
Pentachlorophenol	ND		3.5		ug/L		08/13/12 15:10	08/19/12 18:36	1
Pyridine	ND		10		ug/L		08/13/12 15:10	08/19/12 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*52*		*44 - 148*	*08/13/12 15:10*	*08/19/12 18:36*	*1*
Phenol-d5	*87*		*33 - 147*	*08/13/12 15:10*	*08/19/12 18:36*	*1*
Nitrobenzene-d5	*73*		*49 - 154*	*08/13/12 15:10*	*08/19/12 18:36*	*1*
2-Fluorobiphenyl	*44*		*44 - 157*	*08/13/12 15:10*	*08/19/12 18:36*	*1*
2,4,6-Tribromophenol	*79*		*47 - 158*	*08/13/12 15:10*	*08/19/12 18:36*	*1*
Terphenyl-d14	*78*		*27 - 177*	*08/13/12 15:10*	*08/19/12 18:36*	*1*

Client Sample ID: SSP3.5
Date Collected: 08/03/12 14:45
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND	*	2.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
2-Methylphenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
3 & 4 Methylphenol	ND		4.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
Hexachloroethane	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
Nitrobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
Hexachlorobutadiene	ND	*	3.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
2,4,6-Trichlorophenol	ND		3.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
2,4,5-Trichlorophenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
2,4-Dinitrotoluene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
Hexachlorobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 18:58	1
Pentachlorophenol	ND		3.5		ug/L		08/13/12 15:10	08/19/12 18:58	1
Pyridine	ND		10		ug/L		08/13/12 15:10	08/19/12 18:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*77*		*44 - 148*	*08/13/12 15:10*	*08/19/12 18:58*	*1*
Phenol-d5	*88*		*33 - 147*	*08/13/12 15:10*	*08/19/12 18:58*	*1*
Nitrobenzene-d5	*71*		*49 - 154*	*08/13/12 15:10*	*08/19/12 18:58*	*1*
2-Fluorobiphenyl	*35*	*X*	*44 - 157*	*08/13/12 15:10*	*08/19/12 18:58*	*1*
2,4,6-Tribromophenol	*89*		*47 - 158*	*08/13/12 15:10*	*08/19/12 18:58*	*1*
Terphenyl-d14	*84*		*27 - 177*	*08/13/12 15:10*	*08/19/12 18:58*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: SS10.5 | **Lab Sample ID: 250-5509-1**
Date Collected: 08/03/12 14:35 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 72.6**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1221	ND		4.6		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1232	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1242	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1248	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1254	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1260	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1262	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1
PCB-1268	ND		2.3		ug/Kg	☼	08/08/12 08:22	08/09/12 16:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*55*		*16 - 149*	*08/08/12 08:22*	*08/09/12 16:50*	*1*

Client Sample ID: SM11 | **Lab Sample ID: 250-5509-2**
Date Collected: 08/03/12 14:32 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 74.3**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1221	ND		4.5		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1232	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1242	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1248	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1254	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1260	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1262	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1
PCB-1268	ND		2.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*46*		*16 - 149*	*08/08/12 08:22*	*08/09/12 17:13*	*1*

Client Sample ID: SN12 | **Lab Sample ID: 250-5509-3**
Date Collected: 08/03/12 14:30 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 87.7**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1221	ND		3.8		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1232	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1242	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1248	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1254	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1260	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1262	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1
PCB-1268	ND		1.9		ug/Kg	☼	08/08/12 08:22	08/09/12 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*86*		*16 - 149*	*08/08/12 08:22*	*08/09/12 17:35*	*1*

Client Sample ID: SSP3.5 | **Lab Sample ID: 250-5509-4**
Date Collected: 08/03/12 14:45 | **Matrix: Solid**
Date Received: 08/03/12 15:47 | **Percent Solids: 79.8**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Client Sample ID: SSP3.5
Date Collected: 08/03/12 14:45
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-4
Matrix: Solid
Percent Solids: 79.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1221	ND		4.2		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1232	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1242	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1248	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1254	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1260	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1262	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1
PCB-1268	ND		2.1		ug/Kg	☼	08/08/12 08:22	08/09/12 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*46*		*16 - 149*	*08/08/12 08:22*	*08/09/12 17:57*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Client Sample ID: SS10.5
Date Collected: 08/03/12 14:35
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-1
Matrix: Solid
Percent Solids: 72.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		68		mg/Kg	☼	08/06/12 16:15	08/08/12 11:37	1
Motor Oil Range Organics [C24-C36]	ND		140		mg/Kg	☼	08/06/12 16:15	08/08/12 11:37	1
Gasoline Range Hydrocarbons	ND		27		mg/Kg	☼	08/06/12 16:15	08/08/12 11:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*90*		*50 - 150*	*08/06/12 16:15*	*08/08/12 11:37*	*1*

Client Sample ID: SM11
Date Collected: 08/03/12 14:32
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-2
Matrix: Solid
Percent Solids: 74.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		65		mg/Kg	☼	08/06/12 16:15	08/08/12 12:06	1
Motor Oil Range Organics [C24-C36]	ND		130		mg/Kg	☼	08/06/12 16:15	08/08/12 12:06	1
Gasoline Range Hydrocarbons	ND		26		mg/Kg	☼	08/06/12 16:15	08/08/12 12:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*90*		*50 - 150*	*08/06/12 16:15*	*08/08/12 12:06*	*1*

Client Sample ID: SN12
Date Collected: 08/03/12 14:30
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-3
Matrix: Solid
Percent Solids: 87.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		55		mg/Kg	☼	08/06/12 16:15	08/08/12 12:36	1
Motor Oil Range Organics [C24-C36]	ND		110		mg/Kg	☼	08/06/12 16:15	08/08/12 12:36	1
Gasoline Range Hydrocarbons	ND		22		mg/Kg	☼	08/06/12 16:15	08/08/12 12:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*98*		*50 - 150*	*08/06/12 16:15*	*08/08/12 12:36*	*1*

Client Sample ID: SSP3.5
Date Collected: 08/03/12 14:45
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-4
Matrix: Solid
Percent Solids: 79.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		61		mg/Kg	☼	08/06/12 16:15	08/08/12 13:05	1
Motor Oil Range Organics [C24-C36]	ND		120		mg/Kg	☼	08/06/12 16:15	08/08/12 13:05	1
Gasoline Range Hydrocarbons	ND		25		mg/Kg	☼	08/06/12 16:15	08/08/12 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*101*		*50 - 150*	*08/06/12 16:15*	*08/08/12 13:05*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 6010B - Metals (ICP)

Client Sample ID: SS10.5 — **Lab Sample ID: 250-5509-1**
Date Collected: 08/03/12 14:35 — **Matrix: Solid**
Date Received: 08/03/12 15:47 — **Percent Solids: 72.6**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		6.9		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Barium	**140**		2.8		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Cadmium	ND		2.8		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Chromium	**25**		2.8		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Lead	**7.7**		6.9		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Selenium	ND		6.9		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Silver	ND		6.9		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Copper	**24**		2.8		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1
Zinc	**73**		14		mg/Kg	☼	08/06/12 14:10	08/07/12 17:53	1

Client Sample ID: SM11 — **Lab Sample ID: 250-5509-2**
Date Collected: 08/03/12 14:32 — **Matrix: Solid**
Date Received: 08/03/12 15:47 — **Percent Solids: 74.3**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		6.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Barium	**140**		2.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Cadmium	ND		2.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Chromium	**24**		2.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Lead	**7.9**		6.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Selenium	ND		6.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Silver	ND		6.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Copper	**26**		2.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1
Zinc	**73**		13		mg/Kg	☼	08/06/12 14:10	08/07/12 18:11	1

Client Sample ID: SN12 — **Lab Sample ID: 250-5509-3**
Date Collected: 08/03/12 14:30 — **Matrix: Solid**
Date Received: 08/03/12 15:47 — **Percent Solids: 87.7**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Barium	**120**		2.2		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Cadmium	ND		2.2		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Chromium	**14**		2.2		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Lead	ND		5.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Selenium	ND		5.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Silver	ND		5.6		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Copper	**18**		2.2		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1
Zinc	**56**		11		mg/Kg	☼	08/06/12 14:10	08/07/12 18:17	1

Client Sample ID: SSP3.5 — **Lab Sample ID: 250-5509-4**
Date Collected: 08/03/12 14:45 — **Matrix: Solid**
Date Received: 08/03/12 15:47 — **Percent Solids: 79.8**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		6.0		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Barium	**150**		2.4		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Cadmium	ND		2.4		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Chromium	**19**		2.4		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Lead	ND		6.0		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Selenium	ND		6.0		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Silver	ND		6.0		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Copper	**21**		2.4		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1
Zinc	**63**		12		mg/Kg	☼	08/06/12 14:10	08/07/12 18:23	1

Method: 6010B - Metals (ICP) - TCLP

Client Sample ID: SS10.5
Date Collected: 08/03/12 14:35
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:31	1
Barium	**0.37**		0.010		mg/L		08/08/12 12:41	08/08/12 18:31	1
Cadmium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:31	1
Chromium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:31	1
Lead	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:31	1
Selenium	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:31	1
Silver	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:31	1
Copper	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:31	1
Zinc	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:31	1

Client Sample ID: SM11
Date Collected: 08/03/12 14:32
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:43	1
Barium	**0.38**		0.010		mg/L		08/08/12 12:41	08/08/12 18:43	1
Cadmium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:43	1
Chromium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:43	1
Lead	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:43	1
Selenium	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:43	1
Silver	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:43	1
Copper	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:43	1
Zinc	**0.031**		0.020		mg/L		08/08/12 12:41	08/08/12 18:43	1

Client Sample ID: SN12
Date Collected: 08/03/12 14:30
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:49	1
Barium	**0.39**		0.010		mg/L		08/08/12 12:41	08/08/12 18:49	1
Cadmium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:49	1
Chromium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:49	1
Lead	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:49	1
Selenium	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:49	1
Silver	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:49	1
Copper	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:49	1
Zinc	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:49	1

Client Sample ID: SSP3.5
Date Collected: 08/03/12 14:45
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:55	1
Barium	**0.48**		0.010		mg/L		08/08/12 12:41	08/08/12 18:55	1
Cadmium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:55	1
Chromium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:55	1
Lead	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:55	1
Selenium	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:55	1
Silver	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:55	1
Copper	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:55	1
Zinc	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:55	1

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: SS10.5
Date Collected: 08/03/12 14:35
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/09/12 16:44	08/10/12 09:57	1

Client Sample ID: SM11
Date Collected: 08/03/12 14:32
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/09/12 16:44	08/10/12 10:06	1

Client Sample ID: SN12
Date Collected: 08/03/12 14:30
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/09/12 16:44	08/10/12 10:08	1

Client Sample ID: SSP3.5
Date Collected: 08/03/12 14:45
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/09/12 16:44	08/10/12 10:11	1

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 7471A - Mercury (CVAA)

Client Sample ID: SS10.5
Date Collected: 08/03/12 14:35
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-1
Matrix: Solid
Percent Solids: 72.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.13		mg/Kg	☼	08/07/12 19:41	08/08/12 12:25	1

Client Sample ID: SM11
Date Collected: 08/03/12 14:32
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-2
Matrix: Solid
Percent Solids: 74.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.13		mg/Kg	☼	08/07/12 19:42	08/08/12 12:28	1

Client Sample ID: SN12
Date Collected: 08/03/12 14:30
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-3
Matrix: Solid
Percent Solids: 87.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.11		mg/Kg	☼	08/07/12 19:42	08/08/12 12:30	1

Client Sample ID: SSP3.5
Date Collected: 08/03/12 14:45
Date Received: 08/03/12 15:47

Lab Sample ID: 250-5509-4
Matrix: Solid
Percent Solids: 79.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.12		mg/Kg	☼	08/07/12 19:42	08/08/12 12:33	1

1 2 3 4 5 6 7 8 9 10 11 12

General Chemistry

Client Sample ID: SS10.5 — **Lab Sample ID: 250-5509-1**
Date Collected: 08/03/12 14:35 — **Matrix: Solid**
Date Received: 08/03/12 15:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	73		0.010		%			08/03/12 18:17	1

Client Sample ID: SM11 — **Lab Sample ID: 250-5509-2**
Date Collected: 08/03/12 14:32 — **Matrix: Solid**
Date Received: 08/03/12 15:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	74		0.010		%			08/03/12 18:17	1

Client Sample ID: SN12 — **Lab Sample ID: 250-5509-3**
Date Collected: 08/03/12 14:30 — **Matrix: Solid**
Date Received: 08/03/12 15:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88		0.010		%			08/03/12 18:17	1

Client Sample ID: SSP3.5 — **Lab Sample ID: 250-5509-4**
Date Collected: 08/03/12 14:45 — **Matrix: Solid**
Date Received: 08/03/12 15:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	80		0.010		%			08/03/12 18:17	1

Client: GeoPro Geologic Services | TestAmerica Job ID: 250-5509-1
Project/Site: Calbag Stormwater Upgrade | SDG: 080820

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LCS 580-117543/2-A | **Client Sample ID: Lab Control Sample**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 117951 | **Prep Batch: 117543**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	10.0	3.30	*	ug/L		33	34 - 160
2,4-Dinitrotoluene	10.0	9.59		ug/L		96	42 - 138
Pentachlorophenol	9.84	6.29		ug/L		64	23 - 166

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorophenol	*76*		*44 - 148*
Phenol-d5	*87*		*33 - 147*
Nitrobenzene-d5	*79*		*49 - 154*
2-Fluorobiphenyl	*52*		*44 - 157*
2,4,6-Tribromophenol	*96*		*47 - 158*
Terphenyl-d14	*79*		*27 - 177*

Lab Sample ID: LCSD 580-117543/3-A | **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 117951 | **Prep Batch: 117543**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	10.0	2.71	*	ug/L		27	34 - 160	20	41
2,4-Dinitrotoluene	10.0	9.10		ug/L		91	42 - 138	5	30
Pentachlorophenol	9.84	6.13		ug/L		62	23 - 166	3	45

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorophenol	*72*		*44 - 148*
Phenol-d5	*86*		*33 - 147*
Nitrobenzene-d5	*78*		*49 - 154*
2-Fluorobiphenyl	*54*		*44 - 157*
2,4,6-Tribromophenol	*95*		*47 - 158*
Terphenyl-d14	*80*		*27 - 177*

Lab Sample ID: MB 580-117453/1-C | **Client Sample ID: Method Blank**
Matrix: Solid | **Prep Type: TCLP**
Analysis Batch: 117951 | **Prep Batch: 117543**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
2-Methylphenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
3 & 4 Methylphenol	ND		4.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
Hexachloroethane	ND		3.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
Nitrobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
Hexachlorobutadiene	ND		3.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
2,4,6-Trichlorophenol	ND		3.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
2,4,5-Trichlorophenol	ND		2.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
2,4-Dinitrotoluene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
Hexachlorobenzene	ND		2.0		ug/L		08/13/12 15:10	08/19/12 16:46	1
Pentachlorophenol	ND		3.5		ug/L		08/13/12 15:10	08/19/12 16:46	1
Pyridine	ND		10		ug/L		08/13/12 15:10	08/19/12 16:46	1

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-117453/1-C
Matrix: Solid
Analysis Batch: 117951

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 117543

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*71*		*44 - 148*	*08/13/12 15:10*	*08/19/12 16:46*	*1*
Phenol-d5	*79*		*33 - 147*	*08/13/12 15:10*	*08/19/12 16:46*	*1*
Nitrobenzene-d5	*68*		*49 - 154*	*08/13/12 15:10*	*08/19/12 16:46*	*1*
2-Fluorobiphenyl	*28*	*X*	*44 - 157*	*08/13/12 15:10*	*08/19/12 16:46*	*1*
2,4,6-Tribromophenol	*81*		*47 - 158*	*08/13/12 15:10*	*08/19/12 16:46*	*1*
Terphenyl-d14	*78*		*27 - 177*	*08/13/12 15:10*	*08/19/12 16:46*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 250-8416/1-A
Matrix: Solid
Analysis Batch: 8478

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8416

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		27		ug/Kg		08/06/12 11:50	08/07/12 11:10	1
Butyl benzyl phthalate	ND		27		ug/Kg		08/06/12 11:50	08/07/12 11:10	1
Diethyl phthalate	ND		27		ug/Kg		08/06/12 11:50	08/07/12 11:10	1
Dimethyl phthalate	ND		27		ug/Kg		08/06/12 11:50	08/07/12 11:10	1
Di-n-butyl phthalate	ND		27		ug/Kg		08/06/12 11:50	08/07/12 11:10	1
Di-n-octyl phthalate	ND		27		ug/Kg		08/06/12 11:50	08/07/12 11:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl-d14 (Surr)	*76*		*10 - 150*	*08/06/12 11:50*	*08/07/12 11:10*	*1*
2-Fluorobiphenyl (Surr)	*77*		*10 - 150*	*08/06/12 11:50*	*08/07/12 11:10*	*1*

Lab Sample ID: MB 250-8416/1-A
Matrix: Solid
Analysis Batch: 8543

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8416

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
2-Methylnaphthalene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Acenaphthene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Acenaphthylene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Anthracene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Benzo[a]anthracene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Benzo[a]pyrene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Benzo[b]fluoranthene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Benzo[g,h,i]perylene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Benzo[k]fluoranthene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Chrysene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Dibenz(a,h)anthracene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Fluoranthene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Fluorene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Indeno[1,2,3-cd]pyrene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Naphthalene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Phenanthrene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1
Pyrene	ND		13		ug/Kg		08/06/12 11:50	08/07/12 13:56	1

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 250-8416/1-A
Matrix: Solid
Analysis Batch: 8543

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8416

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12 (Surr)	87		40 - 145	08/06/12 11:50	08/07/12 13:56	1
Fluorene-d10 (Surr)	86		25 - 125	08/06/12 11:50	08/07/12 13:56	1
Pyrene-d10 (Surr)	84		40 - 140	08/06/12 11:50	08/07/12 13:56	1

Lab Sample ID: LCS 250-8416/2-A
Matrix: Solid
Analysis Batch: 8478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	266	199		ug/Kg		75	20 - 150
Butyl benzyl phthalate	266	199		ug/Kg		75	20 - 150
Diethyl phthalate	266	198		ug/Kg		75	20 - 150
Dimethyl phthalate	266	225		ug/Kg		85	20 - 150
Di-n-butyl phthalate	266	208		ug/Kg		78	20 - 150
Di-n-octyl phthalate	266	200		ug/Kg		75	20 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
p-Terphenyl-d14 (Surr)	75		10 - 150
2-Fluorobiphenyl (Surr)	77		10 - 150

Lab Sample ID: LCS 250-8416/2-A
Matrix: Solid
Analysis Batch: 8543

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	166	144		ug/Kg		87	25 - 145
2-Methylnaphthalene	166	141		ug/Kg		85	25 - 145
Acenaphthene	166	156		ug/Kg		94	35 - 140
Acenaphthylene	166	148		ug/Kg		89	40 - 140
Anthracene	166	155		ug/Kg		93	50 - 140
Benzo[a]anthracene	166	151		ug/Kg		91	50 - 150
Benzo[a]pyrene	166	147		ug/Kg		89	45 - 150
Benzo[b]fluoranthene	166	150		ug/Kg		90	50 - 150
Benzo[g,h,i]perylene	166	154		ug/Kg		93	40 - 150
Benzo[k]fluoranthene	166	158		ug/Kg		95	50 - 150
Chrysene	166	150		ug/Kg		91	50 - 140
Dibenz(a,h)anthracene	166	157		ug/Kg		95	45 - 150
Fluoranthene	166	140		ug/Kg		84	45 - 150
Fluorene	166	155		ug/Kg		93	40 - 140
Indeno[1,2,3-cd]pyrene	166	155		ug/Kg		94	45 - 150
Naphthalene	166	148		ug/Kg		89	25 - 145
Phenanthrene	166	154		ug/Kg		93	50 - 135
Pyrene	166	148		ug/Kg		89	40 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Benzo(a)pyrene-d12 (Surr)	86		40 - 145
Fluorene-d10 (Surr)	77		25 - 125
Pyrene-d10 (Surr)	84		40 - 140

QC Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 250-5509-1 MS
Matrix: Solid
Analysis Batch: 8478

Client Sample ID: SS10.5
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	ND		366	264		ug/Kg	☼	72	10 - 150
Butyl benzyl phthalate	ND		366	261		ug/Kg	☼	71	10 - 150
Diethyl phthalate	ND		366	251		ug/Kg	☼	69	10 - 150
Dimethyl phthalate	ND		366	276		ug/Kg	☼	75	10 - 150
Di-n-butyl phthalate	ND		366	261		ug/Kg	☼	71	10 - 150
Di-n-octyl phthalate	ND		366	288		ug/Kg	☼	79	10 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
p-Terphenyl-d14 (Surr)	*56*		*10 - 150*
2-Fluorobiphenyl (Surr)	*62*		*10 - 150*

Lab Sample ID: 250-5509-1 MS
Matrix: Solid
Analysis Batch: 8543

Client Sample ID: SS10.5
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	ND		229	153		ug/Kg	☼	67	15 - 150
2-Methylnaphthalene	ND		229	150		ug/Kg	☼	66	15 - 150
Acenaphthene	ND		229	165		ug/Kg	☼	72	35 - 140
Acenaphthylene	ND		229	158		ug/Kg	☼	69	25 - 150
Anthracene	ND		229	172		ug/Kg	☼	75	30 - 150
Benzo[a]anthracene	ND		229	171		ug/Kg	☼	75	30 - 150
Benzo[a]pyrene	ND		229	168		ug/Kg	☼	74	45 - 150
Benzo[b]fluoranthene	ND		229	175		ug/Kg	☼	76	30 - 150
Benzo[g,h,i]perylene	ND		229	178		ug/Kg	☼	78	25 - 150
Benzo[k]fluoranthene	ND		229	178		ug/Kg	☼	78	25 - 150
Chrysene	ND		229	170		ug/Kg	☼	75	30 - 150
Dibenz(a,h)anthracene	ND		229	181		ug/Kg	☼	79	25 - 150
Fluoranthene	ND		229	158		ug/Kg	☼	69	25 - 150
Fluorene	ND		229	166		ug/Kg	☼	73	25 - 150
Indeno[1,2,3-cd]pyrene	ND		229	179		ug/Kg	☼	78	25 - 150
Naphthalene	ND		229	157		ug/Kg	☼	69	15 - 150
Phenanthrene	ND		229	171		ug/Kg	☼	75	30 - 150
Pyrene	ND		229	170		ug/Kg	☼	74	40 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*70*		*40 - 145*
Fluorene-d10 (Surr)	*61*		*25 - 125*
Pyrene-d10 (Surr)	*69*		*40 - 140*

Lab Sample ID: 250-5509-1 MSD
Matrix: Solid
Analysis Batch: 8478

Client Sample ID: SS10.5
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bis(2-ethylhexyl) phthalate	ND		364	241		ug/Kg	☼	66	10 - 150	9	40
Butyl benzyl phthalate	ND		364	242		ug/Kg	☼	67	10 - 150	7	40
Diethyl phthalate	ND		364	238		ug/Kg	☼	65	10 - 150	5	40
Dimethyl phthalate	ND		364	265		ug/Kg	☼	73	10 - 150	4	40

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 250-5509-1 MSD
Matrix: Solid
Analysis Batch: 8478

Client Sample ID: SS10.5
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Di-n-butyl phthalate	ND		364	245		ug/Kg	☼	67	10 - 150	6	40
Di-n-octyl phthalate	ND		364	209		ug/Kg	☼	57	10 - 150	32	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
p-Terphenyl-d14 (Surr)	*54*		*10 - 150*
2-Fluorobiphenyl (Surr)	*59*		*10 - 150*

Lab Sample ID: 250-5509-1 MSD
Matrix: Solid
Analysis Batch: 8543

Client Sample ID: SS10.5
Prep Type: Total/NA
Prep Batch: 8416

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		227	151		ug/Kg	☼	66	15 - 150	2	40
2-Methylnaphthalene	ND		227	147		ug/Kg	☼	65	15 - 150	2	40
Acenaphthene	ND		227	163		ug/Kg	☼	72	35 - 140	2	40
Acenaphthylene	ND		227	155		ug/Kg	☼	68	25 - 150	2	40
Anthracene	ND		227	165		ug/Kg	☼	73	30 - 150	4	40
Benzo[a]anthracene	ND		227	158		ug/Kg	☼	70	30 - 150	7	40
Benzo[a]pyrene	ND		227	157		ug/Kg	☼	69	45 - 150	7	40
Benzo[b]fluoranthene	ND		227	162		ug/Kg	☼	71	30 - 150	8	40
Benzo[g,h,i]perylene	ND		227	163		ug/Kg	☼	72	25 - 150	8	40
Benzo[k]fluoranthene	ND		227	167		ug/Kg	☼	74	25 - 150	6	40
Chrysene	ND		227	158		ug/Kg	☼	69	30 - 150	8	40
Dibenz(a,h)anthracene	ND		227	167		ug/Kg	☼	73	25 - 150	8	40
Fluoranthene	ND		227	147		ug/Kg	☼	65	25 - 150	7	40
Fluorene	ND		227	162		ug/Kg	☼	71	25 - 150	2	40
Indeno[1,2,3-cd]pyrene	ND		227	165		ug/Kg	☼	73	25 - 150	8	40
Naphthalene	ND		227	155		ug/Kg	☼	68	15 - 150	1	40
Phenanthrene	ND		227	163		ug/Kg	☼	72	30 - 150	5	40
Pyrene	ND		227	162		ug/Kg	☼	71	40 - 140	5	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*67*		*40 - 145*
Fluorene-d10 (Surr)	*61*		*25 - 125*
Pyrene-d10 (Surr)	*68*		*40 - 140*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 250-8496/1-A
Matrix: Solid
Analysis Batch: 8656

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1221	ND		3.3		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1232	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1242	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1248	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1254	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: MB 250-8496/1-A
Matrix: Solid
Analysis Batch: 8656

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1260	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1262	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1
PCB-1268	ND		1.7		ug/Kg		08/08/12 08:22	08/09/12 15:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*107*		*16 - 149*	*08/08/12 08:22*	*08/09/12 15:21*	*1*

Lab Sample ID: LCS 250-8496/2-A
Matrix: Solid
Analysis Batch: 8656

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	16.6	15.2		ug/Kg		91	57 - 135
PCB-1260	16.6	17.0		ug/Kg		102	60 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*111*		*16 - 149*

Lab Sample ID: 250-5509-4 MS
Matrix: Solid
Analysis Batch: 8656

Client Sample ID: SSP3.5
Prep Type: Total/NA
Prep Batch: 8496

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	ND		20.9	9.30		ug/Kg	☼	45	37 - 145
PCB-1260	ND		20.9	11.9		ug/Kg	☼	57	24 - 144

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*59*		*16 - 149*

Lab Sample ID: 250-5509-4 MSD
Matrix: Solid
Analysis Batch: 8656

Client Sample ID: SSP3.5
Prep Type: Total/NA
Prep Batch: 8496

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	ND		20.9	12.4	F	ug/Kg	☼	59	37 - 145	28	26
PCB-1260	ND		20.9	15.4		ug/Kg	☼	74	24 - 144	25	60

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*58*		*16 - 149*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 250-8438/1-A
Matrix: Solid
Analysis Batch: 8526

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8438

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		48		mg/Kg		08/06/12 16:15	08/08/12 10:38	1

QC Sample Results

Client: GeoPro Geologic Services | TestAmerica Job ID: 250-5509-1
Project/Site: Calbag Stormwater Upgrade | SDG: 080820

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC) (Continued)

Lab Sample ID: MB 250-8438/1-A | **Client Sample ID: Method Blank**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 8526 | **Prep Batch: 8438**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C24-C36]	ND		96		mg/Kg		08/06/12 16:15	08/08/12 10:38	1
Gasoline Range Hydrocarbons	ND		19		mg/Kg		08/06/12 16:15	08/08/12 10:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*115*		*50 - 150*	*08/06/12 16:15*	*08/08/12 10:38*	*1*

Lab Sample ID: 250-5509-3 DU | **Client Sample ID: SN12**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 8526 | **Prep Batch: 8438**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Diesel Range Organics (C12-C24)	ND			ND		mg/Kg	☼			NC	50
Motor Oil Range Organics [C24-C36]	ND			ND		mg/Kg	☼			NC	50
Gasoline Range Hydrocarbons	ND			ND		mg/Kg	☼			NC	50

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
1-Chlorooctadecane	*100*		*50 - 150*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 250-8433/1-A | **Client Sample ID: Method Blank**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 8488 | **Prep Batch: 8433**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Barium	ND		2.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Cadmium	ND		2.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Chromium	ND		2.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Lead	ND		5.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Selenium	ND		5.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Silver	ND		5.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Copper	ND		2.0		mg/Kg		08/06/12 14:10	08/07/12 17:38	1
Zinc	ND		10		mg/Kg		08/06/12 14:10	08/07/12 17:38	1

Lab Sample ID: LCS 250-8433/2-A | **Client Sample ID: Lab Control Sample**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 8488 | **Prep Batch: 8433**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	49.5	49.4		mg/Kg		100	80 - 120
Barium	247	254		mg/Kg		103	80 - 120
Cadmium	24.7	25.7		mg/Kg		104	80 - 120
Chromium	49.5	51.2		mg/Kg		104	80 - 120
Lead	49.5	52.1		mg/Kg		105	80 - 120
Selenium	49.5	48.5		mg/Kg		98	80 - 120
Silver	24.7	25.2		mg/Kg		102	80 - 120
Copper	49.5	50.4		mg/Kg		102	80 - 120

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 250-8433/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8488 — **Prep Batch: 8433**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	49.5	50.8		mg/Kg		103	80 - 120

Lab Sample ID: 250-5509-1 MS — **Client Sample ID: SS10.5**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8488 — **Prep Batch: 8433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		66.8	63.4		mg/Kg	☼	88	75 - 125
Barium	140		334	447		mg/Kg	☼	91	75 - 125
Cadmium	ND		33.4	30.1		mg/Kg	☼	89	75 - 125
Chromium	25		66.8	86.8		mg/Kg	☼	92	75 - 125
Lead	7.7		66.8	66.3		mg/Kg	☼	88	75 - 125
Selenium	ND		66.8	53.5		mg/Kg	☼	80	75 - 125
Silver	ND		33.4	33.1		mg/Kg	☼	99	75 - 125
Copper	24		66.8	85.8		mg/Kg	☼	92	75 - 125
Zinc	73		66.8	132		mg/Kg	☼	88	75 - 125

Lab Sample ID: 250-5509-1 MSD — **Client Sample ID: SS10.5**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8488 — **Prep Batch: 8433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		68.5	66.7		mg/Kg	☼	91	75 - 125	5	40
Barium	140		342	469		mg/Kg	☼	95	75 - 125	5	40
Cadmium	ND		34.2	31.7		mg/Kg	☼	91	75 - 125	5	40
Chromium	25		68.5	93.2		mg/Kg	☼	100	75 - 125	7	40
Lead	7.7		68.5	69.6		mg/Kg	☼	90	75 - 125	5	40
Selenium	ND		68.5	55.7		mg/Kg	☼	81	75 - 125	4	40
Silver	ND		34.2	34.1		mg/Kg	☼	99	75 - 125	3	40
Copper	24		68.5	89.8		mg/Kg	☼	96	75 - 125	5	40
Zinc	73		68.5	138		mg/Kg	☼	95	75 - 125	5	40

Lab Sample ID: MB 250-8515/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8535 — **Prep Batch: 8515**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:19	1
Barium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:19	1
Cadmium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:19	1
Chromium	ND		0.010		mg/L		08/08/12 12:41	08/08/12 18:19	1
Lead	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:19	1
Selenium	ND		0.050		mg/L		08/08/12 12:41	08/08/12 18:19	1
Silver	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:19	1
Copper	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:19	1
Zinc	ND		0.020		mg/L		08/08/12 12:41	08/08/12 18:19	1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 250-8515/2-A
Matrix: Solid
Analysis Batch: 8535

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8515

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.05		mg/L		105	85 - 115
Barium	5.00	5.08		mg/L		102	85 - 115
Cadmium	0.500	0.531		mg/L		106	85 - 115
Chromium	1.00	1.03		mg/L		103	85 - 115
Lead	1.00	1.06		mg/L		106	85 - 115
Selenium	1.00	1.08		mg/L		108	85 - 115
Silver	0.500	0.461		mg/L		92	85 - 115
Copper	1.00	0.988		mg/L		99	85 - 115
Zinc	1.00	1.08		mg/L		108	85 - 115

Lab Sample ID: 250-5509-1 MS
Matrix: Solid
Analysis Batch: 8535

Client Sample ID: SS10.5
Prep Type: TCLP
Prep Batch: 8515

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	1.07		mg/L		107	75 - 125
Barium	0.37		5.00	5.45		mg/L		102	75 - 125
Cadmium	ND		0.500	0.529		mg/L		106	75 - 125
Chromium	ND		1.00	1.04		mg/L		104	75 - 125
Lead	ND		1.00	1.06		mg/L		106	75 - 125
Selenium	ND		1.00	1.10		mg/L		109	75 - 125
Silver	ND		0.500	0.461		mg/L		92	75 - 125
Copper	ND		1.00	1.00		mg/L		100	75 - 125
Zinc	ND		1.00	1.09		mg/L		107	75 - 125

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LCS 250-8593/2-A
Matrix: Solid
Analysis Batch: 8620

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8593

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00486		mg/L		97	85 - 115

Lab Sample ID: MB 250-8444/1-B
Matrix: Solid
Analysis Batch: 8620

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 8593

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/09/12 16:44	08/10/12 09:35	1

Lab Sample ID: 250-5509-1 MS
Matrix: Solid
Analysis Batch: 8620

Client Sample ID: SS10.5
Prep Type: TCLP
Prep Batch: 8593

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00500	0.00432		mg/L		86	75 - 125

QC Sample Results

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 250-5509-1 MSD — **Client Sample ID: SS10.5**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 8620 — **Prep Batch: 8593**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00412		mg/L		82	75 - 125	5	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 250-8490/10-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8516 — **Prep Batch: 8490**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.090		mg/Kg		08/07/12 19:41	08/08/12 11:50	1

Lab Sample ID: LCS 250-8490/11-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8516 — **Prep Batch: 8490**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.527	0.503		mg/Kg		96	80 - 120

Lab Sample ID: 250-5297-A-1-M MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8516 — **Prep Batch: 8490**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.30		0.754	0.856	F	mg/Kg	☼	74	75 - 125

Lab Sample ID: 250-5297-A-1-N MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8516 — **Prep Batch: 8490**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.30		0.742	0.835	F	mg/Kg	☼	73	75 - 125	3	40

Method: D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Lab Sample ID: 250-5509-2 DU — **Client Sample ID: SM11**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 8383

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	74		74		%		0.9	20

QC Association Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

GC/MS Semi VOA

Prep Batch: 8416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	3550B	
250-5509-1 MS	SS10.5	Total/NA	Solid	3550B	
250-5509-1 MSD	SS10.5	Total/NA	Solid	3550B	
250-5509-2	SM11	Total/NA	Solid	3550B	
250-5509-3	SN12	Total/NA	Solid	3550B	
250-5509-4	SSP3.5	Total/NA	Solid	3550B	
LCS 250-8416/2-A	Lab Control Sample	Total/NA	Solid	3550B	
MB 250-8416/1-A	Method Blank	Total/NA	Solid	3550B	

Analysis Batch: 8478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	8270C SIM	8416
250-5509-1 MS	SS10.5	Total/NA	Solid	8270C SIM	8416
250-5509-1 MSD	SS10.5	Total/NA	Solid	8270C SIM	8416
250-5509-2	SM11	Total/NA	Solid	8270C SIM	8416
250-5509-3	SN12	Total/NA	Solid	8270C SIM	8416
250-5509-4	SSP3.5	Total/NA	Solid	8270C SIM	8416
LCS 250-8416/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	8416
MB 250-8416/1-A	Method Blank	Total/NA	Solid	8270C SIM	8416

Analysis Batch: 8543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	8270C SIM	8416
250-5509-1 MS	SS10.5	Total/NA	Solid	8270C SIM	8416
250-5509-1 MSD	SS10.5	Total/NA	Solid	8270C SIM	8416
250-5509-2	SM11	Total/NA	Solid	8270C SIM	8416
250-5509-3	SN12	Total/NA	Solid	8270C SIM	8416
250-5509-4	SSP3.5	Total/NA	Solid	8270C SIM	8416
LCS 250-8416/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	8416
MB 250-8416/1-A	Method Blank	Total/NA	Solid	8270C SIM	8416

Leach Batch: 117453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	1311	
250-5509-2	SM11	TCLP	Solid	1311	
250-5509-3	SN12	TCLP	Solid	1311	
250-5509-4	SSP3.5	TCLP	Solid	1311	
MB 580-117453/1-C	Method Blank	TCLP	Solid	1311	

Prep Batch: 117543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	3510C	117453
250-5509-2	SM11	TCLP	Solid	3510C	117453
250-5509-3	SN12	TCLP	Solid	3510C	117453
250-5509-4	SSP3.5	TCLP	Solid	3510C	117453
LCS 580-117543/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 580-117543/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	
MB 580-117453/1-C	Method Blank	TCLP	Solid	3510C	117453

Analysis Batch: 117951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	8270C	117543

GC/MS Semi VOA (Continued)

Analysis Batch: 117951 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-2	SM11	TCLP	Solid	8270C	117543
250-5509-3	SN12	TCLP	Solid	8270C	117543
250-5509-4	SSP3.5	TCLP	Solid	8270C	117543
LCS 580-117543/2-A	Lab Control Sample	Total/NA	Solid	8270C	117543
LCSD 580-117543/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C	117543
MB 580-117453/1-C	Method Blank	TCLP	Solid	8270C	117543

GC Semi VOA

Prep Batch: 8438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	3550B	
250-5509-2	SM11	Total/NA	Solid	3550B	
250-5509-3	SN12	Total/NA	Solid	3550B	
250-5509-3 DU	SN12	Total/NA	Solid	3550B	
250-5509-4	SSP3.5	Total/NA	Solid	3550B	
MB 250-8438/1-A	Method Blank	Total/NA	Solid	3550B	

Prep Batch: 8496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	3550B	
250-5509-2	SM11	Total/NA	Solid	3550B	
250-5509-3	SN12	Total/NA	Solid	3550B	
250-5509-4	SSP3.5	Total/NA	Solid	3550B	
250-5509-4 MS	SSP3.5	Total/NA	Solid	3550B	
250-5509-4 MSD	SSP3.5	Total/NA	Solid	3550B	
LCS 250-8496/2-A	Lab Control Sample	Total/NA	Solid	3550B	
MB 250-8496/1-A	Method Blank	Total/NA	Solid	3550B	

Analysis Batch: 8526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	NWTPH-HCID	8438
250-5509-2	SM11	Total/NA	Solid	NWTPH-HCID	8438
250-5509-3	SN12	Total/NA	Solid	NWTPH-HCID	8438
250-5509-3 DU	SN12	Total/NA	Solid	NWTPH-HCID	8438
250-5509-4	SSP3.5	Total/NA	Solid	NWTPH-HCID	8438
MB 250-8438/1-A	Method Blank	Total/NA	Solid	NWTPH-HCID	8438

Analysis Batch: 8656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	8082	8496
250-5509-2	SM11	Total/NA	Solid	8082	8496
250-5509-3	SN12	Total/NA	Solid	8082	8496
250-5509-4	SSP3.5	Total/NA	Solid	8082	8496
250-5509-4 MS	SSP3.5	Total/NA	Solid	8082	8496
250-5509-4 MSD	SSP3.5	Total/NA	Solid	8082	8496
LCS 250-8496/2-A	Lab Control Sample	Total/NA	Solid	8082	8496
MB 250-8496/1-A	Method Blank	Total/NA	Solid	8082	8496

QC Association Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Metals

Prep Batch: 8433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	3050B	
250-5509-1 MS	SS10.5	Total/NA	Solid	3050B	
250-5509-1 MSD	SS10.5	Total/NA	Solid	3050B	
250-5509-2	SM11	Total/NA	Solid	3050B	
250-5509-3	SN12	Total/NA	Solid	3050B	
250-5509-4	SSP3.5	Total/NA	Solid	3050B	
LCS 250-8433/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 250-8433/1-A	Method Blank	Total/NA	Solid	3050B	

Leach Batch: 8444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	1311	
250-5509-1 MS	SS10.5	TCLP	Solid	1311	
250-5509-1 MSD	SS10.5	TCLP	Solid	1311	
250-5509-2	SM11	TCLP	Solid	1311	
250-5509-3	SN12	TCLP	Solid	1311	
250-5509-4	SSP3.5	TCLP	Solid	1311	
MB 250-8444/1-B	Method Blank	TCLP	Solid	1311	

Analysis Batch: 8488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	6010B	8433
250-5509-1 MS	SS10.5	Total/NA	Solid	6010B	8433
250-5509-1 MSD	SS10.5	Total/NA	Solid	6010B	8433
250-5509-2	SM11	Total/NA	Solid	6010B	8433
250-5509-3	SN12	Total/NA	Solid	6010B	8433
250-5509-4	SSP3.5	Total/NA	Solid	6010B	8433
LCS 250-8433/2-A	Lab Control Sample	Total/NA	Solid	6010B	8433
MB 250-8433/1-A	Method Blank	Total/NA	Solid	6010B	8433

Prep Batch: 8490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5297-A-1-M MS	Matrix Spike	Total/NA	Solid	7471A	
250-5297-A-1-N MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	
250-5509-1	SS10.5	Total/NA	Solid	7471A	
250-5509-2	SM11	Total/NA	Solid	7471A	
250-5509-3	SN12	Total/NA	Solid	7471A	
250-5509-4	SSP3.5	Total/NA	Solid	7471A	
LCS 250-8490/11-A	Lab Control Sample	Total/NA	Solid	7471A	
MB 250-8490/10-A	Method Blank	Total/NA	Solid	7471A	

Prep Batch: 8515

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	3005A	8444
250-5509-1 MS	SS10.5	TCLP	Solid	3005A	8444
250-5509-2	SM11	TCLP	Solid	3005A	8444
250-5509-3	SN12	TCLP	Solid	3005A	8444
250-5509-4	SSP3.5	TCLP	Solid	3005A	8444
LCS 250-8515/2-A	Lab Control Sample	Total/NA	Solid	3005A	
MB 250-8515/1-A	Method Blank	Total/NA	Solid	3005A	

1 2 3 4 5 6 7 8 9 10 11 12

Metals (Continued)

Analysis Batch: 8516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5297-A-1-M MS	Matrix Spike	Total/NA	Solid	7471A	8490
250-5297-A-1-N MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	8490
250-5509-1	SS10.5	Total/NA	Solid	7471A	8490
250-5509-2	SM11	Total/NA	Solid	7471A	8490
250-5509-3	SN12	Total/NA	Solid	7471A	8490
250-5509-4	SSP3.5	Total/NA	Solid	7471A	8490
LCS 250-8490/11-A	Lab Control Sample	Total/NA	Solid	7471A	8490
MB 250-8490/10-A	Method Blank	Total/NA	Solid	7471A	8490

Analysis Batch: 8535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	6010B	8515
250-5509-1 MS	SS10.5	TCLP	Solid	6010B	8515
250-5509-2	SM11	TCLP	Solid	6010B	8515
250-5509-3	SN12	TCLP	Solid	6010B	8515
250-5509-4	SSP3.5	TCLP	Solid	6010B	8515
LCS 250-8515/2-A	Lab Control Sample	Total/NA	Solid	6010B	8515
MB 250-8515/1-A	Method Blank	Total/NA	Solid	6010B	8515

Prep Batch: 8593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	7470A	8444
250-5509-1 MS	SS10.5	TCLP	Solid	7470A	8444
250-5509-1 MSD	SS10.5	TCLP	Solid	7470A	8444
250-5509-2	SM11	TCLP	Solid	7470A	8444
250-5509-3	SN12	TCLP	Solid	7470A	8444
250-5509-4	SSP3.5	TCLP	Solid	7470A	8444
LCS 250-8593/2-A	Lab Control Sample	Total/NA	Solid	7470A	
MB 250-8444/1-B	Method Blank	TCLP	Solid	7470A	8444

Analysis Batch: 8620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	TCLP	Solid	7470A	8593
250-5509-1 MS	SS10.5	TCLP	Solid	7470A	8593
250-5509-1 MSD	SS10.5	TCLP	Solid	7470A	8593
250-5509-2	SM11	TCLP	Solid	7470A	8593
250-5509-3	SN12	TCLP	Solid	7470A	8593
250-5509-4	SSP3.5	TCLP	Solid	7470A	8593
LCS 250-8593/2-A	Lab Control Sample	Total/NA	Solid	7470A	8593
MB 250-8444/1-B	Method Blank	TCLP	Solid	7470A	8593

General Chemistry

Analysis Batch: 8383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
250-5509-1	SS10.5	Total/NA	Solid	D2216-80	
250-5509-2	SM11	Total/NA	Solid	D2216-80	
250-5509-2 DU	SM11	Total/NA	Solid	D2216-80	
250-5509-3	SN12	Total/NA	Solid	D2216-80	
250-5509-4	SSP3.5	Total/NA	Solid	D2216-80	

Certification Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	OR00040	06-30-13
Alaska (UST)	State Program	10	UST-012	12-26-12
California	State Program	9	2597	09-30-13
Oregon	NELAC	10	OR100021	01-09-13
USDA	Federal		P330-11-00092	02-17-14
Washington	State Program	10	C586	06-23-12

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-13
California	NELAC	9	1115CA	01-31-13
L-A-B	DoD ELAP		L2236	01-19-13
L-A-B	ISO/IEC 17025		L2236	01-19-13
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAC	10	WA100007	11-06-12
USDA	Federal		P330-11-00222	05-20-14
Washington	State Program	10	C553	02-17-13

Method Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5509-1
SDG: 080820

Method	Method Description	Protocol	Laboratory
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SEA
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL PRT
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL PRT
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	TAL PRT
6010B	Metals (ICP)	SW846	TAL PRT
7470A	Mercury (CVAA)	SW846	TAL PRT
7471A	Mercury (CVAA)	SW846	TAL PRT
D2216-80	Percent Dry Weight (Solids) per ASTM D2216-80	ASTM	TAL PRT

Protocol References:

ASTM = ASTM International

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PRT = TestAmerica Portland, 9405 SW Nimbus Ave., Beaverton, OR 97008, TEL (503)906-9200

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 — 420-9210 [ ]
5755 8th Street East, Tacoma, Wa 98424 — 922-5047 [ ]
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 — 906-9210 [X]
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 — 563-9210 [ ]

Loc: 250
5509

CHAIN OF CUSTODY REPORT

Work Order

CLIENT: GeoPro LLC
REPORT TO: P.O. Box 26
ADDRESS: Battle Ground, WA 98604
PHONE: (360)666-1466 FAX:
PROJECT NAME: Calbag Stormwater Upgrade
PROJECT NUMBER: 080820
SAMPLED BY: P. Kent

INVOICE TO: GeoPro LLC
P.O. Box 26
Battle Ground, WA 98604

P.O. NUMBER:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] 10 STD. [ ] 7 [ ] 5 [ ] 4 [ ] 3 [ ] 2 [ ] 1 [ ] <1
Petroleum Hydrocarbon Analyses: [X] 5 STD. [ ] 4 [ ] 3 [ ] 2 [ ] 1 [ ] <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE

REQUESTED ANALYSES (*TCLP)

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	8270 SIM JSC * inc. Phthalates	PCBs as Aroclors JSC	Total * Metals	HCID									MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	SS10.5	8/3/12 @1435	X	X	X	X									S	2		
2	SM11	8/3/12 @ 1432	↓	↓	↓	↓									↓	↓		
3	SN12	8/3/12 @1430	↓	↓	↓	↓									↓	↓		
4	SSP3.5	8/3/12 @ 1445	↓	↓	↓	↓									↓	↓		
5																		
6																		
7																		
8																		
9																		
10																		

RELEASED BY: PATRICK Kent
PRINT NAME: [signature]
FIRM: GeoPro LLC
DATE: 8/3/12
TIME: 1547

RECEIVED BY: [signature]
PRINT NAME: Phil Svalu-Sere
FIRM: TAP
DATE: 8/3/12
TIME: 1547

RELEASED BY:
PRINT NAME:
FIRM:
DATE:
TIME:

RECEIVED BY:
PRINT NAME:
FIRM:
DATE:
TIME:

ADDITIONAL REMARKS:

TEMP: 10.1
PAGE OF

TAL-1000 (0212)

*TCLP on 8270 & Total Metals

Login Sample Receipt Checklist

Client: GeoPro Geologic Services

Job Number: 250-5509-1
SDG Number: 080820

Login Number: 5509
List Number: 1
Creator: Svabik-Seror, Philip

List Source: TestAmerica Portland

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-6379-1
TestAmerica Sample Delivery Group: 080820
Client Project/Site: Calbag Stormwater Upgrade
Revision: 1

For:
GeoPro Geologic Services
PO BOX 26
Battle Ground, Washington 98604

Attn: Richard Kent

Authorized for release by:
9/25/2012 11:28:25 AM
Peggy Siegfried
Project Manager I
peggy.siegfried@testamericainc.com

Designee for

Ella Sandquist
Project Manager I
ella.sandquist@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Sample Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-6379-1	T3	Solid	09/01/12 10:55	09/04/12 13:10
250-6379-2	CB1	Solid	09/01/12 14:25	09/04/12 13:10
250-6379-3	CB2	Solid	09/01/12 14:30	09/04/12 13:10
250-6379-4	CB3	Solid	09/01/12 14:35	09/04/12 13:10
250-6379-5	CB4	Solid	09/01/12 14:59	09/04/12 13:10

Job ID: 250-6379-1

Laboratory: TestAmerica Portland

Narrative

Job Narrative
250-6379-1

Comments
No additional comments.

Receipt
The samples were received on 9/4/2012 1:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.9º C.

Except:

The following sample(s) was received at the laboratory outside the required temperature criteria: CB1 (250-6379-2), CB2 (250-6379-3), CB3 (250-6379-4), CB4 (250-6379-5), T3 (250-6379-1). The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

GC/MS Semi VOA
Method(s) 8270C SIM: The continuing calibration verification (CCV) associated with batch 9505 recovered above the upper control limit for Pentachlorophenol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: (LCS 250-9505/2-A), (LCSD 250-9505/3-A), (MB 250-9505/1-A), CB3 (250-6379-4).

Method(s) 8270C SIM: Perylene-d12 internal standard failure in LCSD was overlooked by primary analyst and secondary reviewer. Di-n-octyl-phthalate is the only target compound associated with this internal standard. After the error was discovered, instrument maintenance was preformed and reanalysis of the LCSD demonstrated all QA/QC recoveries to be well within acceptance criteria. The original LCS analysis has been rejected and the re-analysis has been properly linked to client sample to provide acceptable batch QC. The sample results are unaffected.

No other analytical or quality issues were noted.

GC Semi VOA
No analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: CB3
Date Collected: 09/01/12 14:35
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-4
Matrix: Solid
Percent Solids: 72.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Bis(2-ethylhexyl) phthalate	ND		36		ug/Kg	☼	09/05/12 07:51	09/05/12 11:25	1
Butyl benzyl phthalate	ND		36		ug/Kg	☼	09/05/12 07:51	09/05/12 11:25	1
2-Methylnaphthalene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Diethyl phthalate	ND		36		ug/Kg	☼	09/05/12 07:51	09/05/12 11:25	1
Acenaphthene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Dimethyl phthalate	ND		36		ug/Kg	☼	09/05/12 07:51	09/05/12 11:25	1
Acenaphthylene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Di-n-butyl phthalate	ND		36		ug/Kg	☼	09/05/12 07:51	09/05/12 11:25	1
Anthracene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Di-n-octyl phthalate	ND		36		ug/Kg	☼	09/05/12 07:51	09/05/12 11:25	1
Benzo[a]anthracene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Benzo[a]pyrene	**18**		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Benzo[b]fluoranthene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Benzo[g,h,i]perylene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Benzo[k]fluoranthene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Chrysene	**18**		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Dibenz(a,h)anthracene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Fluoranthene	**22**		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Fluorene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Indeno[1,2,3-cd]pyrene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Naphthalene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Pentachlorophenol	ND		91		ug/Kg	☼	09/05/12 07:51	09/05/12 17:46	1
Phenanthrene	ND		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1
Pyrene	**27**		18		ug/Kg	☼	09/05/12 07:51	09/05/12 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*102*		*10 - 150*	*09/05/12 07:51*	*09/05/12 17:46*	*1*
Benzo(a)pyrene-d12 (Surr)	*76*		*40 - 145*	*09/05/12 07:51*	*09/05/12 14:21*	*1*
p-Terphenyl-d14 (Surr)	*70*		*10 - 150*	*09/05/12 07:51*	*09/05/12 11:25*	*1*
2-Fluorobiphenyl (Surr)	*66*		*10 - 150*	*09/05/12 07:51*	*09/05/12 11:25*	*1*
Fluorene-d10 (Surr)	*84*		*25 - 125*	*09/05/12 07:51*	*09/05/12 14:21*	*1*
Pyrene-d10 (Surr)	*77*		*40 - 140*	*09/05/12 07:51*	*09/05/12 14:21*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: T3
Date Collected: 09/01/12 10:55
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-1
Matrix: Solid
Percent Solids: 79.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1221	ND		4.2		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1232	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1242	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1248	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1254	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1260	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1262	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1
PCB-1268	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*69*		*16 - 149*	*09/05/12 11:18*	*09/05/12 16:38*	*1*

Client Sample ID: CB1
Date Collected: 09/01/12 14:25
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-2
Matrix: Solid
Percent Solids: 70.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1221	ND		4.7		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1232	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1242	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1248	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1254	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1260	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1262	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1
PCB-1268	ND		2.4		ug/Kg	☼	09/05/12 11:18	09/05/12 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*64*		*16 - 149*	*09/05/12 11:18*	*09/05/12 17:01*	*1*

Client Sample ID: CB2
Date Collected: 09/01/12 14:30
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-3
Matrix: Solid
Percent Solids: 77.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1221	ND		4.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1232	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1242	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1248	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1254	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1260	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1262	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1
PCB-1268	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*71*		*16 - 149*	*09/05/12 11:18*	*09/05/12 17:23*	*1*

Client Sample ID: CB3
Date Collected: 09/01/12 14:35
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-4
Matrix: Solid
Percent Solids: 72.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Client Sample ID: CB3 | **Lab Sample ID: 250-6379-4**
Date Collected: 09/01/12 14:35 | **Matrix: Solid**
Date Received: 09/04/12 13:10 | **Percent Solids: 72.6**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1221	ND		4.6		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1232	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1242	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1248	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1254	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1260	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1262	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1
PCB-1268	ND		2.3		ug/Kg	☼	09/05/12 11:18	09/05/12 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*63*		*16 - 149*	*09/05/12 11:18*	*09/05/12 17:45*	*1*

Client Sample ID: CB4 | **Lab Sample ID: 250-6379-5**
Date Collected: 09/01/12 14:59 | **Matrix: Solid**
Date Received: 09/04/12 13:10 | **Percent Solids: 78.1**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1221	ND		4.3		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1232	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1242	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1248	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1254	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1260	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1262	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1
PCB-1268	ND		2.1		ug/Kg	☼	09/05/12 11:18	09/05/12 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*63*		*16 - 149*	*09/05/12 11:18*	*09/05/12 18:08*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Client Sample ID: T3
Date Collected: 09/01/12 10:55
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-1
Matrix: Solid
Percent Solids: 79.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		62		mg/Kg	☼	09/04/12 14:45	09/04/12 20:23	1
Motor Oil Range Organics [C24-C36]	ND		120		mg/Kg	☼	09/04/12 14:45	09/04/12 20:23	1
Gasoline Range Hydrocarbons	ND		25		mg/Kg	☼	09/04/12 14:45	09/04/12 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*116*		*50 - 150*	*09/04/12 14:45*	*09/04/12 20:23*	*1*

Client Sample ID: CB4
Date Collected: 09/01/12 14:59
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-5
Matrix: Solid
Percent Solids: 78.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		63		mg/Kg	☼	09/04/12 14:45	09/04/12 20:52	1
Motor Oil Range Organics [C24-C36]	ND		130		mg/Kg	☼	09/04/12 14:45	09/04/12 20:52	1
Gasoline Range Hydrocarbons	ND		25		mg/Kg	☼	09/04/12 14:45	09/04/12 20:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*107*		*50 - 150*	*09/04/12 14:45*	*09/04/12 20:52*	*1*

1 2 3 4 5 6 7 8 9 10 11

Method: 6020 - Metals (ICP/MS) - TCLP

Client Sample ID: T3
Date Collected: 09/01/12 10:55
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:43	10
Barium	**0.72**		0.010		mg/L		09/05/12 11:38	09/05/12 20:43	10
Cadmium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:43	10
Chromium	ND		0.020		mg/L		09/05/12 11:38	09/05/12 20:43	10
Lead	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:43	10
Selenium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:43	10
Silver	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:43	10

Client Sample ID: CB2
Date Collected: 09/01/12 14:30
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.014**		0.010		mg/L		09/05/12 11:38	09/05/12 20:47	10
Barium	**0.57**		0.010		mg/L		09/05/12 11:38	09/05/12 20:47	10
Cadmium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:47	10
Chromium	ND		0.020		mg/L		09/05/12 11:38	09/05/12 20:47	10
Lead	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:47	10
Selenium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:47	10
Silver	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:47	10

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: T3
Date Collected: 09/01/12 10:55
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/06/12 15:05	09/06/12 21:49	1

Client Sample ID: CB2
Date Collected: 09/01/12 14:30
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/06/12 15:05	09/06/12 21:51	1

General Chemistry

Client Sample ID: T3
Date Collected: 09/01/12 10:55
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	80		0.010		%			09/04/12 18:44	1

Client Sample ID: CB1
Date Collected: 09/01/12 14:25
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	70		0.010		%			09/04/12 18:44	1

Client Sample ID: CB2
Date Collected: 09/01/12 14:30
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	78		0.010		%			09/04/12 18:44	1

Client Sample ID: CB3
Date Collected: 09/01/12 14:35
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	73		0.010		%			09/04/12 18:44	1

Client Sample ID: CB4
Date Collected: 09/01/12 14:59
Date Received: 09/04/12 13:10

Lab Sample ID: 250-6379-5
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	78		0.010		%			09/04/12 18:44	1

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 250-9505/1-A
Matrix: Solid
Analysis Batch: 9585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9505

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		27		ug/Kg		09/05/12 07:51	09/05/12 11:48	1
Butyl benzyl phthalate	ND		27		ug/Kg		09/05/12 07:51	09/05/12 11:48	1
Diethyl phthalate	ND		27		ug/Kg		09/05/12 07:51	09/05/12 11:48	1
Dimethyl phthalate	ND		27		ug/Kg		09/05/12 07:51	09/05/12 11:48	1
Di-n-butyl phthalate	ND		27		ug/Kg		09/05/12 07:51	09/05/12 11:48	1
Di-n-octyl phthalate	ND		27		ug/Kg		09/05/12 07:51	09/05/12 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl-d14 (Surr)	*93*		*10 - 150*	*09/05/12 07:51*	*09/05/12 11:48*	*1*
2-Fluorobiphenyl (Surr)	*72*		*10 - 150*	*09/05/12 07:51*	*09/05/12 11:48*	*1*

Lab Sample ID: MB 250-9505/1-A
Matrix: Solid
Analysis Batch: 9583

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9505

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
2-Methylnaphthalene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Acenaphthene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Acenaphthylene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Anthracene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Benzo[a]anthracene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Benzo[a]pyrene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Benzo[b]fluoranthene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Benzo[g,h,i]perylene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Benzo[k]fluoranthene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Chrysene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Dibenz(a,h)anthracene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Fluoranthene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Fluorene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Indeno[1,2,3-cd]pyrene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Naphthalene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Phenanthrene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1
Pyrene	ND		13		ug/Kg		09/05/12 07:51	09/05/12 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*95*		*40 - 145*	*09/05/12 07:51*	*09/05/12 16:19*	*1*
Fluorene-d10 (Surr)	*102*		*25 - 125*	*09/05/12 07:51*	*09/05/12 16:19*	*1*
Pyrene-d10 (Surr)	*97*		*40 - 140*	*09/05/12 07:51*	*09/05/12 16:19*	*1*

Lab Sample ID: MB 250-9505/1-A
Matrix: Solid
Analysis Batch: 9585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9505

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		67		ug/Kg		09/05/12 07:51	09/05/12 17:18	1

QC Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 250-9505/1-A
Matrix: Solid
Analysis Batch: 9585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9505

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	102		10 - 150	09/05/12 07:51	09/05/12 17:18	1

Lab Sample ID: LCS 250-9505/2-A
Matrix: Solid
Analysis Batch: 9585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	267	225		ug/Kg		84	20 - 150
Butyl benzyl phthalate	267	226		ug/Kg		85	20 - 150
Diethyl phthalate	267	203		ug/Kg		76	20 - 150
Dimethyl phthalate	267	204		ug/Kg		77	20 - 150
Di-n-butyl phthalate	267	212		ug/Kg		79	20 - 150
Di-n-octyl phthalate	267	215		ug/Kg		81	20 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
p-Terphenyl-d14 (Surr)	91		10 - 150
2-Fluorobiphenyl (Surr)	72		10 - 150

Lab Sample ID: LCS 250-9505/2-A
Matrix: Solid
Analysis Batch: 9585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	333	468		ug/Kg		140	15 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol (Surr)	105		10 - 150

Lab Sample ID: LCS 250-9505/2-A
Matrix: Solid
Analysis Batch: 9583

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	167	149		ug/Kg		89	25 - 145
2-Methylnaphthalene	167	143		ug/Kg		86	25 - 145
Acenaphthene	167	168		ug/Kg		101	35 - 140
Acenaphthylene	167	159		ug/Kg		95	40 - 140
Anthracene	167	175		ug/Kg		105	50 - 140
Benzo[a]anthracene	167	157		ug/Kg		94	50 - 150
Benzo[a]pyrene	167	170		ug/Kg		102	45 - 150
Benzo[b]fluoranthene	167	179		ug/Kg		107	50 - 150
Benzo[g,h,i]perylene	167	164		ug/Kg		98	40 - 150
Benzo[k]fluoranthene	167	182		ug/Kg		109	50 - 150
Chrysene	167	163		ug/Kg		98	50 - 140
Dibenz(a,h)anthracene	167	168		ug/Kg		101	45 - 150
Fluoranthene	167	159		ug/Kg		95	45 - 150
Fluorene	167	171		ug/Kg		103	40 - 140
Indeno[1,2,3-cd]pyrene	167	166		ug/Kg		100	45 - 150
Naphthalene	167	167		ug/Kg		100	25 - 145

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 250-9505/2-A
Matrix: Solid
Analysis Batch: 9583

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenanthrene	167	174		ug/Kg		104	50 - 135
Pyrene	167	167		ug/Kg		100	40 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*95*		*40 - 145*
Fluorene-d10 (Surr)	*100*		*25 - 125*
Pyrene-d10 (Surr)	*90*		*40 - 140*

Lab Sample ID: LCSD 250-9505/3-A
Matrix: Solid
Analysis Batch: 9585

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 9505

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	331	475		ug/Kg		144	15 - 150	2	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*119*		*10 - 150*

Lab Sample ID: LCSD 250-9505/3-A
Matrix: Solid
Analysis Batch: 9583

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 9505

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	165	150		ug/Kg		91	25 - 145	1	40
2-Methylnaphthalene	165	145		ug/Kg		88	25 - 145	1	40
Acenaphthene	165	169		ug/Kg		102	35 - 140	1	40
Acenaphthylene	165	159		ug/Kg		96	40 - 140	0	40
Anthracene	165	174		ug/Kg		105	50 - 140	1	40
Benzo[a]anthracene	165	158		ug/Kg		96	50 - 150	1	40
Benzo[a]pyrene	165	170		ug/Kg		103	45 - 150	0	40
Benzo[b]fluoranthene	165	171		ug/Kg		104	50 - 150	4	40
Benzo[g,h,i]perylene	165	163		ug/Kg		99	40 - 150	1	40
Benzo[k]fluoranthene	165	191		ug/Kg		116	50 - 150	5	40
Chrysene	165	164		ug/Kg		99	50 - 140	1	40
Dibenz(a,h)anthracene	165	167		ug/Kg		101	45 - 150	1	40
Fluoranthene	165	158		ug/Kg		95	45 - 150	1	40
Fluorene	165	170		ug/Kg		103	40 - 140	1	40
Indeno[1,2,3-cd]pyrene	165	164		ug/Kg		99	45 - 150	1	40
Naphthalene	165	169		ug/Kg		102	25 - 145	1	40
Phenanthrene	165	173		ug/Kg		104	50 - 135	1	40
Pyrene	165	170		ug/Kg		103	40 - 140	2	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*96*		*40 - 145*
Fluorene-d10 (Surr)	*101*		*25 - 125*
Pyrene-d10 (Surr)	*92*		*40 - 140*

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 250-9521/1-A
Matrix: Solid
Analysis Batch: 9563

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9521

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1221	ND		3.3		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1232	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1242	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1248	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1254	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1260	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1262	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1
PCB-1268	ND		1.7		ug/Kg		09/05/12 11:18	09/05/12 15:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*96*		*16 - 149*	*09/05/12 11:18*	*09/05/12 15:09*	*1*

Lab Sample ID: LCS 250-9521/2-A
Matrix: Solid
Analysis Batch: 9563

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9521

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	16.6	13.7		ug/Kg		82	57 - 135
PCB-1260	16.6	15.1		ug/Kg		91	60 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*95*		*16 - 149*

Lab Sample ID: 250-6379-2 MS
Matrix: Solid
Analysis Batch: 9563

Client Sample ID: CB1
Prep Type: Total/NA
Prep Batch: 9521

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	ND		23.6	18.9		ug/Kg	☼	80	37 - 145
PCB-1260	ND		23.6	15.9		ug/Kg	☼	67	24 - 144

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*69*		*16 - 149*

Lab Sample ID: 250-6379-2 MSD
Matrix: Solid
Analysis Batch: 9563

Client Sample ID: CB1
Prep Type: Total/NA
Prep Batch: 9521

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	ND		23.7	19.6		ug/Kg	☼	83	37 - 145	4	26
PCB-1260	ND		23.7	16.6		ug/Kg	☼	70	24 - 144	4	60

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*61*		*16 - 149*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 250-9483/1-A
Matrix: Solid
Analysis Batch: 9512

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9483

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		49		mg/Kg		09/04/12 14:45	09/04/12 19:24	1
Motor Oil Range Organics [C24-C36]	ND		99		mg/Kg		09/04/12 14:45	09/04/12 19:24	1
Gasoline Range Hydrocarbons	ND		20		mg/Kg		09/04/12 14:45	09/04/12 19:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*127*		*50 - 150*	*09/04/12 14:45*	*09/04/12 19:24*	*1*

Lab Sample ID: 250-6379-1 DU
Matrix: Solid
Analysis Batch: 9512

Client Sample ID: T3
Prep Type: Total/NA
Prep Batch: 9483

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Diesel Range Organics (C12-C24)	ND		ND		mg/Kg	☼	NC	50
Motor Oil Range Organics [C24-C36]	ND		ND		mg/Kg	☼	NC	50
Gasoline Range Hydrocarbons	ND		ND		mg/Kg	☼	NC	50

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
1-Chlorooctadecane	*118*		*50 - 150*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 250-9519/1-A
Matrix: Solid
Analysis Batch: 9557

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:28	10
Barium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:28	10
Cadmium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:28	10
Chromium	ND		0.020		mg/L		09/05/12 11:38	09/05/12 20:28	10
Lead	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:28	10
Selenium	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:28	10
Silver	ND		0.010		mg/L		09/05/12 11:38	09/05/12 20:28	10

Lab Sample ID: LCS 250-9519/2-A
Matrix: Solid
Analysis Batch: 9557

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9519

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.993		mg/L		99	80 - 120
Barium	1.00	0.997		mg/L		100	80 - 120
Cadmium	1.00	0.975		mg/L		98	80 - 120
Chromium	1.00	0.969		mg/L		97	80 - 120
Lead	1.00	0.891		mg/L		89	80 - 120
Selenium	1.00	0.946		mg/L		95	80 - 120
Silver	0.500	0.477		mg/L		95	80 - 120

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 250-9526/1-A
Matrix: Solid
Analysis Batch: 9557

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9526

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010		mg/L		09/05/12 12:08	09/05/12 19:30	1
Barium	ND		0.0010		mg/L		09/05/12 12:08	09/05/12 19:30	1
Cadmium	ND		0.0010		mg/L		09/05/12 12:08	09/05/12 19:30	1
Chromium	ND		0.0020		mg/L		09/05/12 12:08	09/05/12 19:30	1
Lead	ND		0.0010		mg/L		09/05/12 12:08	09/05/12 19:30	1
Selenium	ND		0.0010		mg/L		09/05/12 12:08	09/05/12 19:30	1
Silver	ND		0.0010		mg/L		09/05/12 12:08	09/05/12 19:30	1

Lab Sample ID: LCS 250-9526/2-A
Matrix: Solid
Analysis Batch: 9557

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9526

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0993		mg/L		99	80 - 120
Barium	0.100	0.104		mg/L		104	80 - 120
Cadmium	0.100	0.101		mg/L		101	80 - 120
Chromium	0.100	0.100		mg/L		100	80 - 120
Lead	0.100	0.102		mg/L		102	80 - 120
Selenium	0.100	0.0907		mg/L		91	80 - 120
Silver	0.0500	0.0532		mg/L		106	80 - 120

Lab Sample ID: 250-6387-B-1-B MS
Matrix: Solid
Analysis Batch: 9558

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 9526

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.062		0.100	0.166		mg/L		103	75 - 125
Barium	ND		0.100	0.0975		mg/L		96	75 - 125
Cadmium	ND		0.100	0.0926		mg/L		93	75 - 125
Chromium	0.021		0.100	0.127		mg/L		106	75 - 125
Lead	0.049		0.100	0.131		mg/L		82	75 - 125
Selenium	ND		0.100	0.0929		mg/L		90	75 - 125
Silver	0.073		0.0500	0.123		mg/L		99	75 - 125

Lab Sample ID: 250-6358-A-1-C MS
Matrix: Solid
Analysis Batch: 9557

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 9519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	0.986		mg/L		98	75 - 125
Barium	0.42		1.00	1.41		mg/L		99	75 - 125
Cadmium	0.010		1.00	0.982		mg/L		97	75 - 125
Chromium	0.47		1.00	1.42		mg/L		95	75 - 125
Lead	0.028		1.00	0.918		mg/L		89	75 - 125
Selenium	ND		1.00	0.928		mg/L		93	75 - 125
Silver	ND		0.500	0.469		mg/L		94	75 - 125

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LCS 250-9590/12-A
Matrix: Solid
Analysis Batch: 9609

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9590

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00490		mg/L		98	85 - 115		

Lab Sample ID: MB 250-9469/5-B
Matrix: Solid
Analysis Batch: 9609

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 9590

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/06/12 15:05	09/06/12 21:32	1

Lab Sample ID: 250-6289-A-1-I MS
Matrix: Solid
Analysis Batch: 9609

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 9590

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00500	0.00506		mg/L		101	75 - 125		

Lab Sample ID: 250-6289-A-1-J MSD
Matrix: Solid
Analysis Batch: 9609

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 9590

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00503		mg/L		101	75 - 125	1	20

Method: D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Lab Sample ID: 250-6326-A-2 DU
Matrix: Solid
Analysis Batch: 9495

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	77			75		%				3	20

Certification Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	OR00040	06-30-13
Alaska (UST)	State Program	10	UST-012	12-26-12
California	State Program	9	2597	09-30-13
Oregon	NELAC	10	OR100021	01-09-13
USDA	Federal		P330-11-00092	02-17-14
Washington	State Program	10	C586	06-23-12

Method Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-6379-1
SDG: 080820

Method	Method Description	Protocol	Laboratory
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL PRT
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL PRT
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	TAL PRT
6020	Metals (ICP/MS)	SW846	TAL PRT
7470A	Mercury (CVAA)	SW846	TAL PRT
D2216-80	Percent Dry Weight (Solids) per ASTM D2216-80	ASTM	TAL PRT

Protocol References:

ASTM = ASTM International

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PRT = TestAmerica Portland, 9405 SW Nimbus Ave., Beaverton, OR 97008, TEL (503)906-9200

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
5755 8th Street East, Tacoma, Wa 98424 253-
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-

Loc: 250
6379

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoPro LLC

REPORT TO: P.O. Box 26
ADDRESS: Battle Ground, WA 98604

PHONE: (360) 666-1465 ~~FAX:~~ geopro@comcast.net

PROJECT NAME: Calbag Stormwater Upgrade

PROJECT NUMBER: 080820

SAMPLED BY: R. Kent

INVOICE TO: GeoPro LLC
PO Box 26
Battle Ground, WA 98604

P.O. NUMBER:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 (STD.) 7 5 4 3 2 1 ~~<1~~

Petroleum Hydrocarbon Analyses: 5 (STD.) 4 3 2 1 ~~<1~~

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TSC PCBs Aroclor	8082	NWTPH HCID	TCLP 6010B Metals	7470A Mercury TCLP		8270C SIM SV							MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	T3	9/1/12 1055	X		X	X	X									S	2	trench	
2	CB1	9/1/12 1425	X													S	2	CB5 NW wall	
3	CB2	9/1/12 1430	X			X	X									S	2	CB5 center	
4	CB3	9/1/12 1435	X						X							S	2	CB5 SE wall	
5	CB4	9/1/12 1459	X		X											S	2	CB5 confirm	
6																			
7																			
8																			
9																			
10																			

RELEASED BY: [signature]	FIRM: GeoPro LLC	DATE: 9/4/12	TIME: 1310	RECEIVED BY: [signature] PRINT NAME: Phil Svabik-Seror	FIRM: TAP	DATE: 9/4/12	TIME: 1310
RELEASED BY: PRINT NAME:	FIRM:	DATE:	TIME:	RECEIVED BY: PRINT NAME:	FIRM:	DATE:	TIME:

ADDITIONAL REMARKS:

TEMP: 10.9

PAGE OF

TAL-1000 (0212)

* Client aware out of temp.

1R/G-2

Login Sample Receipt Checklist

Client: GeoPro Geologic Services

Job Number: 250-6379-1
SDG Number: 080820

Login Number: 6379
List Number: 1
Creator: Svabik-Seror, Philip

List Source: TestAmerica Portland

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-5986-1
Client Project/Site: Calbag Stormwater Upgrade
Revision: 1

For:
GeoPro Geologic Services
PO BOX 26
Battle Ground, Washington 98604

Attn: Richard Kent

Authorized for release by:
9/6/2012 2:31:33 PM

Peggy Siegfried
Project Manager I
peggy.siegfried@testamericainc.com

1 2 3 4 5 6 7 8 9 10 11

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Sample Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-5986-1	T1	Solid	08/17/12 14:50	08/20/12 14:30
250-5986-2	T2	Solid	08/17/12 14:45	08/20/12 14:30

Case Narrative

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Job ID: 250-5986-1

Laboratory: TestAmerica Portland

Narrative

Job Narrative
250-5986-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2012 2:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2º C.

GC/MS Semi VOA
No analytical or quality issues were noted.

GC Semi VOA
Method(s) 8082: The following sample(s) appears to contain polychlorinated biphenyls (PCBs); however, due to weathering or other environmental processes, the PCBs in the sample do not closely match any of the laboratory's Aroclor standards used for instrument calibration: T1 (250-5986-1). The sample(s) has been quantified and reported as Aroclor 1254. Due to the poor match with the Aroclor standard(s), there is increased qualitative and quantitative uncertainty associated with this result.

No other analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Definitions/Glossary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits
F	RPD of the MS and MSD exceeds the control limits

GC Semi VOA

Qualifier	Qualifier Description
F	RPD of the MS and MSD exceeds the control limits

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
2-Methylnaphthalene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Acenaphthene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Acenaphthylene	**41**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Anthracene	**67**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Benzo[a]anthracene	**250**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Benzo[a]pyrene	**220**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Benzo[b]fluoranthene	**160**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Benzo[g,h,i]perylene	**150**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Benzo[k]fluoranthene	**160**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Chrysene	**260**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Dibenz(a,h)anthracene	**51**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Fluoranthene	**380**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Fluorene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Indeno[1,2,3-cd]pyrene	**120**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Naphthalene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Phenanthrene	**180**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1
Pyrene	**470**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 20:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*76*		*40 - 145*	*08/21/12 11:24*	*08/22/12 20:37*	*1*
Fluorene-d10 (Surr)	*72*		*25 - 125*	*08/21/12 11:24*	*08/22/12 20:37*	*1*
Pyrene-d10 (Surr)	*77*		*40 - 140*	*08/21/12 11:24*	*08/22/12 20:37*	*1*

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
2-Methylnaphthalene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Acenaphthene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Acenaphthylene	**44**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Anthracene	**33**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Benzo[a]anthracene	**95**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Benzo[a]pyrene	**170**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Benzo[b]fluoranthene	**120**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Benzo[g,h,i]perylene	**200**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Benzo[k]fluoranthene	**110**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Chrysene	**150**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Dibenz(a,h)anthracene	**39**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Fluoranthene	**210**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Fluorene	ND		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Indeno[1,2,3-cd]pyrene	**140**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Naphthalene	**16**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Phenanthrene	**170**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1
Pyrene	**250**		16		ug/Kg	☼	08/21/12 11:24	08/22/12 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*78*		*40 - 145*	*08/21/12 11:24*	*08/22/12 21:08*	*1*
Fluorene-d10 (Surr)	*73*		*25 - 125*	*08/21/12 11:24*	*08/22/12 21:08*	*1*
Pyrene-d10 (Surr)	*77*		*40 - 140*	*08/21/12 11:24*	*08/22/12 21:08*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		390		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1
Butyl benzyl phthalate	ND		390		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1
Di-n-butyl phthalate	ND		390		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1
Di-n-octyl phthalate	ND		390		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1
Diethyl phthalate	ND		790		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1
Dimethyl phthalate	ND		390		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1
Pentachlorophenol	ND		1900		ug/Kg	☼	08/31/12 16:20	09/04/12 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*78*		*50 - 120*	*08/31/12 16:20*	*09/04/12 17:30*	*1*
2-Fluorophenol	*76*		*53 - 120*	*08/31/12 16:20*	*09/04/12 17:30*	*1*
2-Fluorobiphenyl	*89*		*50 - 120*	*08/31/12 16:20*	*09/04/12 17:30*	*1*
2,4,6-Tribromophenol	*99*		*51 - 120*	*08/31/12 16:20*	*09/04/12 17:30*	*1*
Terphenyl-d14	*101*		*55 - 120*	*08/31/12 16:20*	*09/04/12 17:30*	*1*
Phenol-d5	*81*		*52 - 120*	*08/31/12 16:20*	*09/04/12 17:30*	*1*

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		380		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1
Butyl benzyl phthalate	ND		380		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1
Di-n-butyl phthalate	ND		380		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1
Di-n-octyl phthalate	ND		380		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1
Diethyl phthalate	ND		770		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1
Dimethyl phthalate	ND		380		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1
Pentachlorophenol	ND		1900		ug/Kg	☼	08/31/12 16:20	09/04/12 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*77*		*50 - 120*	*08/31/12 16:20*	*09/04/12 18:31*	*1*
2-Fluorophenol	*79*		*53 - 120*	*08/31/12 16:20*	*09/04/12 18:31*	*1*
2-Fluorobiphenyl	*87*		*50 - 120*	*08/31/12 16:20*	*09/04/12 18:31*	*1*
2,4,6-Tribromophenol	*100*		*51 - 120*	*08/31/12 16:20*	*09/04/12 18:31*	*1*
Terphenyl-d14	*100*		*55 - 120*	*08/31/12 16:20*	*09/04/12 18:31*	*1*
Phenol-d5	*82*		*52 - 120*	*08/31/12 16:20*	*09/04/12 18:31*	*1*

1 2 3 4 5 6 7 8 9 10 11

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: T1
Lab Sample ID: 250-5986-1
Date Collected: 08/17/12 14:50
Matrix: Solid
Date Received: 08/20/12 14:30
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1221	ND		12		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1232	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1242	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1248	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1254	**13**		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1260	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1262	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3
PCB-1268	ND		6.0		ug/Kg	☼	08/22/12 14:05	08/23/12 17:40	3

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*76*		*16 - 149*	*08/22/12 14:05*	*08/23/12 17:40*	*3*

Client Sample ID: T2
Lab Sample ID: 250-5986-2
Date Collected: 08/17/12 14:45
Matrix: Solid
Date Received: 08/20/12 14:30
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1221	ND		81		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1232	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1242	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1248	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1254	**86**		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1260	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1262	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20
PCB-1268	ND		40		ug/Kg	☼	08/22/12 14:05	08/23/12 18:02	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*76*		*16 - 149*	*08/22/12 14:05*	*08/23/12 18:02*	*20*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Client Sample ID: T1
Lab Sample ID: 250-5986-1
Date Collected: 08/17/12 14:50
Matrix: Solid
Date Received: 08/20/12 14:30
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		58		mg/Kg	☼	08/21/12 18:15	08/22/12 12:26	1
Motor Oil Range Organics [C24-C36]	ND		120		mg/Kg	☼	08/21/12 18:15	08/22/12 12:26	1
Gasoline Range Hydrocarbons	ND		23		mg/Kg	☼	08/21/12 18:15	08/22/12 12:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*102*		*50 - 150*	*08/21/12 18:15*	*08/22/12 12:26*	*1*

Client Sample ID: T2
Lab Sample ID: 250-5986-2
Date Collected: 08/17/12 14:45
Matrix: Solid
Date Received: 08/20/12 14:30
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		60		mg/Kg	☼	08/21/12 18:15	08/22/12 12:56	1
Motor Oil Range Organics [C24-C36]	ND		120		mg/Kg	☼	08/21/12 18:15	08/22/12 12:56	1
Gasoline Range Hydrocarbons	ND		24		mg/Kg	☼	08/21/12 18:15	08/22/12 12:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*97*		*50 - 150*	*08/21/12 18:15*	*08/22/12 12:56*	*1*

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 6010B - Metals (ICP)

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		6.0		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Barium	**120**		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Cadmium	ND		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Chromium	**16**		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Lead	**29**		6.0		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Selenium	ND		6.0		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Silver	ND		6.0		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Copper	**26**		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1
Zinc	**83**		12		mg/Kg	☼	08/21/12 13:56	08/22/12 00:57	1

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		6.1		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Barium	**270**		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Cadmium	ND		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Chromium	**22**		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Lead	**270**		6.1		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Selenium	ND		6.1		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Silver	ND		6.1		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Copper	**200**		2.4		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1
Zinc	**390**		12		mg/Kg	☼	08/21/12 13:56	08/22/12 01:03	1

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Method: 6010B - Metals (ICP) - TCLP

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.060		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Barium	**1.7**		0.012		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Cadmium	ND		0.012		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Chromium	ND		0.012		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Lead	**0.23**		0.060		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Selenium	ND		0.060		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Silver	ND		0.024		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Copper	**0.12**		0.024		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1
Zinc	**1.9**		0.024		mg/L	☼	08/22/12 15:55	08/23/12 01:32	1

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.061		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Barium	**1.5**		0.012		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Cadmium	ND		0.012		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Chromium	ND		0.012		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Lead	**0.42**		0.061		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Selenium	ND		0.061		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Silver	ND		0.024		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Copper	**0.29**		0.024		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1
Zinc	**1.9**		0.024		mg/L	☼	08/22/12 15:55	08/23/12 01:45	1

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/12 14:37	08/23/12 21:22	1

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/12 14:37	08/23/12 21:35	1

Client Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 7471A - Mercury (CVAA)

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.26		0.12		mg/Kg	☼	08/23/12 16:56	08/24/12 09:58	1

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid
Percent Solids: 82.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.68		0.11		mg/Kg	☼	08/23/12 16:57	08/24/12 10:06	1

General Chemistry

Client Sample ID: T1
Date Collected: 08/17/12 14:50
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83		0.010		%			08/20/12 19:47	1

Client Sample ID: T2
Date Collected: 08/17/12 14:45
Date Received: 08/20/12 14:30

Lab Sample ID: 250-5986-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	82		0.010		%			08/21/12 17:50	1

1 2 3 4 5 6 7 8 9 10 11

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 280-135276/1-A
Matrix: Solid
Analysis Batch: 135606

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 135276

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		310		ug/Kg		08/31/12 16:20	09/04/12 14:08	1
Butyl benzyl phthalate	ND		310		ug/Kg		08/31/12 16:20	09/04/12 14:08	1
Di-n-butyl phthalate	ND		310		ug/Kg		08/31/12 16:20	09/04/12 14:08	1
Di-n-octyl phthalate	ND		310		ug/Kg		08/31/12 16:20	09/04/12 14:08	1
Diethyl phthalate	ND		630		ug/Kg		08/31/12 16:20	09/04/12 14:08	1
Dimethyl phthalate	ND		310		ug/Kg		08/31/12 16:20	09/04/12 14:08	1
Pentachlorophenol	ND		1500		ug/Kg		08/31/12 16:20	09/04/12 14:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*86*		*50 - 120*	*08/31/12 16:20*	*09/04/12 14:08*	*1*
2-Fluorophenol	*89*		*53 - 120*	*08/31/12 16:20*	*09/04/12 14:08*	*1*
2-Fluorobiphenyl	*89*		*50 - 120*	*08/31/12 16:20*	*09/04/12 14:08*	*1*
2,4,6-Tribromophenol	*81*		*51 - 120*	*08/31/12 16:20*	*09/04/12 14:08*	*1*
Terphenyl-d14	*103*		*55 - 120*	*08/31/12 16:20*	*09/04/12 14:08*	*1*
Phenol-d5	*90*		*52 - 120*	*08/31/12 16:20*	*09/04/12 14:08*	*1*

Lab Sample ID: LCS 280-135276/2-A
Matrix: Solid
Analysis Batch: 135606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135276

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	2530	1590		ug/Kg		63	56 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*81*		*50 - 120*
2-Fluorophenol	*83*		*53 - 120*
2-Fluorobiphenyl	*87*		*50 - 120*
2,4,6-Tribromophenol	*99*		*51 - 120*
Terphenyl-d14	*96*		*55 - 120*
Phenol-d5	*83*		*52 - 120*

Lab Sample ID: 250-5986-1 MS
Matrix: Solid
Analysis Batch: 135606

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 135276

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	ND		3210	2060		ug/Kg	☼	64	56 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Nitrobenzene-d5	*71*		*50 - 120*
2-Fluorophenol	*71*		*53 - 120*
2-Fluorobiphenyl	*80*		*50 - 120*
2,4,6-Tribromophenol	*93*		*51 - 120*
Terphenyl-d14	*89*		*55 - 120*
Phenol-d5	*78*		*52 - 120*

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

1 2 3 4 5 6 7 8 9 10 11

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 250-5986-1 MSD
Matrix: Solid
Analysis Batch: 135606

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 135276

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	ND		3210	2420		ug/Kg	☼	75	56 - 120	16	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5	*75*		*50 - 120*
2-Fluorophenol	*73*		*53 - 120*
2-Fluorobiphenyl	*86*		*50 - 120*
2,4,6-Tribromophenol	*101*		*51 - 120*
Terphenyl-d14	*93*		*55 - 120*
Phenol-d5	*79*		*52 - 120*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 250-8993/1-A
Matrix: Solid
Analysis Batch: 9062

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8993

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
2-Methylnaphthalene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Acenaphthene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Acenaphthylene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Anthracene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Benzo[a]anthracene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Benzo[a]pyrene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Benzo[b]fluoranthene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Benzo[g,h,i]perylene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Benzo[k]fluoranthene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Chrysene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Dibenz(a,h)anthracene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Fluoranthene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Fluorene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Indeno[1,2,3-cd]pyrene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Naphthalene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Phenanthrene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1
Pyrene	ND		13		ug/Kg		08/21/12 11:24	08/21/12 18:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*81*		*40 - 145*	*08/21/12 11:24*	*08/21/12 18:29*	*1*
Fluorene-d10 (Surr)	*78*		*25 - 125*	*08/21/12 11:24*	*08/21/12 18:29*	*1*
Pyrene-d10 (Surr)	*85*		*40 - 140*	*08/21/12 11:24*	*08/21/12 18:29*	*1*

Lab Sample ID: LCS 250-8993/2-A
Matrix: Solid
Analysis Batch: 9062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	166	148		ug/Kg		89	25 - 145
2-Methylnaphthalene	166	144		ug/Kg		87	25 - 145
Acenaphthene	166	163		ug/Kg		98	35 - 140

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 250-8993/2-A
Matrix: Solid
Analysis Batch: 9062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthylene	166	153		ug/Kg		92	40 - 140
Anthracene	166	167		ug/Kg		100	50 - 140
Benzo[a]anthracene	166	160		ug/Kg		96	50 - 150
Benzo[a]pyrene	166	160		ug/Kg		96	45 - 150
Benzo[b]fluoranthene	166	172		ug/Kg		104	50 - 150
Benzo[g,h,i]perylene	166	159		ug/Kg		96	40 - 150
Benzo[k]fluoranthene	166	171		ug/Kg		103	50 - 150
Chrysene	166	160		ug/Kg		97	50 - 140
Dibenz(a,h)anthracene	166	163		ug/Kg		98	45 - 150
Fluoranthene	166	156		ug/Kg		94	45 - 150
Fluorene	166	167		ug/Kg		101	40 - 140
Indeno[1,2,3-cd]pyrene	166	161		ug/Kg		97	45 - 150
Naphthalene	166	155		ug/Kg		93	25 - 145
Phenanthrene	166	171		ug/Kg		103	50 - 135
Pyrene	166	168		ug/Kg		101	40 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*83*		*40 - 145*
Fluorene-d10 (Surr)	*58*		*25 - 125*
Pyrene-d10 (Surr)	*82*		*40 - 140*

Lab Sample ID: 250-5923-A-1-C MS
Matrix: Solid
Analysis Batch: 9062

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 8993

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	ND		217	134		ug/Kg	☼	43	15 - 150
2-Methylnaphthalene	ND		217	132		ug/Kg	☼	47	15 - 150
Acenaphthene	ND		217	166		ug/Kg	☼	43	35 - 140
Acenaphthylene	ND		217	139		ug/Kg	☼	64	25 - 150
Anthracene	ND		217	159		ug/Kg	☼	57	30 - 150
Benzo[a]anthracene	ND		217	140		ug/Kg	☼	64	30 - 150
Benzo[a]pyrene	ND		217	137		ug/Kg	☼	63	45 - 150
Benzo[b]fluoranthene	ND		217	146		ug/Kg	☼	67	30 - 150
Benzo[g,h,i]perylene	ND		217	142		ug/Kg	☼	65	25 - 150
Benzo[k]fluoranthene	ND		217	156		ug/Kg	☼	72	25 - 150
Chrysene	ND		217	145		ug/Kg	☼	57	30 - 150
Dibenz(a,h)anthracene	ND		217	141		ug/Kg	☼	65	25 - 150
Fluoranthene	ND		217	148		ug/Kg	☼	52	25 - 150
Fluorene	290		217	206	F	ug/Kg	☼	-37	25 - 150
Indeno[1,2,3-cd]pyrene	ND		217	143		ug/Kg	☼	66	25 - 150
Naphthalene	ND		217	131		ug/Kg	☼	39	15 - 150
Phenanthrene	630		217	294	F	ug/Kg	☼	-154	30 - 150
Pyrene	ND		217	157		ug/Kg	☼	53	40 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*59*		*40 - 145*
Fluorene-d10 (Surr)	*72*		*25 - 125*
Pyrene-d10 (Surr)	*60*		*40 - 140*

1 2 3 4 5 6 7 8 9 10 11

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 250-5923-A-1-D MSD
Matrix: Solid
Analysis Batch: 9062

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 8993

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		216	179		ug/Kg	☼	64	15 - 150	29	40
2-Methylnaphthalene	ND		216	182		ug/Kg	☼	70	15 - 150	31	40
Acenaphthene	ND		216	219		ug/Kg	☼	67	35 - 140	27	40
Acenaphthylene	ND		216	172		ug/Kg	☼	79	25 - 150	21	40
Anthracene	ND		216	212		ug/Kg	☼	82	30 - 150	29	40
Benzo[a]anthracene	ND		216	159		ug/Kg	☼	74	30 - 150	13	40
Benzo[a]pyrene	ND		216	157		ug/Kg	☼	73	45 - 150	13	40
Benzo[b]fluoranthene	ND		216	170		ug/Kg	☼	79	30 - 150	16	40
Benzo[g,h,i]perylene	ND		216	163		ug/Kg	☼	76	25 - 150	14	40
Benzo[k]fluoranthene	ND		216	169		ug/Kg	☼	78	25 - 150	8	40
Chrysene	ND		216	166		ug/Kg	☼	67	30 - 150	13	40
Dibenz(a,h)anthracene	ND		216	158		ug/Kg	☼	73	25 - 150	11	40
Fluoranthene	ND		216	184		ug/Kg	☼	69	25 - 150	21	40
Fluorene	290		216	378	F	ug/Kg	☼	42	25 - 150	59	40
Indeno[1,2,3-cd]pyrene	ND		216	162		ug/Kg	☼	75	25 - 150	13	40
Naphthalene	ND		216	175		ug/Kg	☼	59	15 - 150	29	40
Phenanthrene	630		216	554	F	ug/Kg	☼	-35	30 - 150	61	40
Pyrene	ND		216	200		ug/Kg	☼	73	40 - 140	24	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*72*		*40 - 145*
Fluorene-d10 (Surr)	*66*		*25 - 125*
Pyrene-d10 (Surr)	*76*		*40 - 140*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 250-9059/1-A
Matrix: Solid
Analysis Batch: 9111

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9059

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1221	ND		3.3		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1232	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1242	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1248	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1254	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1260	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1262	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1
PCB-1268	ND		1.7		ug/Kg		08/22/12 14:05	08/23/12 18:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*87*		*16 - 149*	*08/22/12 14:05*	*08/23/12 18:24*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 250-9059/2-A
Matrix: Solid
Analysis Batch: 9111

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9059

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	16.7	14.2		ug/Kg		85	57 - 135
PCB-1260	16.7	15.7		ug/Kg		94	60 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*94*		*16 - 149*

Lab Sample ID: 250-5986-1 MS
Matrix: Solid
Analysis Batch: 9111

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 9059

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	ND		20.0	11.1		ug/Kg	☼	55	37 - 145
PCB-1260	ND		20.0	16.0		ug/Kg	☼	80	24 - 144

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*61*		*16 - 149*

Lab Sample ID: 250-5986-1 MSD
Matrix: Solid
Analysis Batch: 9111

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 9059

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	ND		20.1	25.7	F	ug/Kg	☼	128	37 - 145	79	26
PCB-1260	ND		20.1	16.7		ug/Kg	☼	83	24 - 144	4	60

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*38*		*16 - 149*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 250-9019/1-A
Matrix: Solid
Analysis Batch: 9046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9019

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C12-C24)	ND		48		mg/Kg		08/21/12 18:15	08/22/12 11:32	1
Motor Oil Range Organics [C24-C36]	ND		97		mg/Kg		08/21/12 18:15	08/22/12 11:32	1
Gasoline Range Hydrocarbons	ND		19		mg/Kg		08/21/12 18:15	08/22/12 11:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctadecane	*113*		*50 - 150*	*08/21/12 18:15*	*08/22/12 11:32*	*1*

QC Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC) (Continued)

Lab Sample ID: 250-5986-1 DU
Matrix: Solid
Analysis Batch: 9046

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 9019

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Diesel Range Organics (C12-C24)	ND		ND		mg/Kg	☼	NC	50
Motor Oil Range Organics [C24-C36]	ND		ND		mg/Kg	☼	NC	50
Gasoline Range Hydrocarbons	ND		ND		mg/Kg	☼	NC	50

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
1-Chlorooctadecane	*99*		*50 - 150*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 250-8996/1-A
Matrix: Solid
Analysis Batch: 9031

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 8996

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Barium	ND		2.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Cadmium	ND		2.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Chromium	ND		2.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Lead	ND		5.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Selenium	ND		5.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Silver	ND		5.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Copper	ND		2.0		mg/Kg		08/21/12 11:45	08/21/12 23:23	1
Zinc	ND		10		mg/Kg		08/21/12 11:45	08/21/12 23:23	1

Lab Sample ID: LCS 250-8996/2-A
Matrix: Solid
Analysis Batch: 9031

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 8996

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	49.9	48.6		mg/Kg		97	80 - 120
Barium	249	245		mg/Kg		98	80 - 120
Cadmium	24.9	24.5		mg/Kg		98	80 - 120
Chromium	49.9	49.5		mg/Kg		99	80 - 120
Lead	49.9	49.6		mg/Kg		99	80 - 120
Selenium	49.9	46.7		mg/Kg		94	80 - 120
Silver	24.9	24.3		mg/Kg		97	80 - 120
Copper	49.9	49.0		mg/Kg		98	80 - 120
Zinc	49.9	49.5		mg/Kg		99	80 - 120

Lab Sample ID: 250-5975-A-1-B MS
Matrix: Solid
Analysis Batch: 9031

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 8996

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		245	243		mg/Kg		99	75 - 125
Barium	530		1230	1690		mg/Kg		94	75 - 125
Cadmium	ND		123	121		mg/Kg		99	75 - 125
Chromium	8000		245	9560	4	mg/Kg		653	75 - 125

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 250-5975-A-1-B MS
Matrix: Solid
Analysis Batch: 9031

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 8996

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	ND		245	227		mg/Kg		92	75 - 125
Silver	ND		123	120		mg/Kg		98	75 - 125
Copper	ND		245	234		mg/Kg		95	75 - 125
Zinc	540		245	793		mg/Kg		102	75 - 125

Lab Sample ID: 250-5975-A-1-C MSD
Matrix: Solid
Analysis Batch: 9031

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 8996

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		249	243		mg/Kg		97	75 - 125	0	40
Barium	530		1250	1700		mg/Kg		94	75 - 125	1	40
Cadmium	ND		125	122		mg/Kg		98	75 - 125	1	40
Chromium	8000		249	9590	4	mg/Kg		657	75 - 125	0	40
Selenium	ND		249	231		mg/Kg		93	75 - 125	2	40
Silver	ND		125	122		mg/Kg		98	75 - 125	1	40
Copper	ND		249	235		mg/Kg		94	75 - 125	1	40
Zinc	540		249	806		mg/Kg		106	75 - 125	2	40

Lab Sample ID: 250-5975-A-1-C MSD
Matrix: Solid
Analysis Batch: 9031

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 8996

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	36000		249	41900	4	mg/Kg		2275	75 - 125	2	40

Lab Sample ID: MB 250-9069/1-A
Matrix: Solid
Analysis Batch: 9122

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9069

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/22/12 15:55	08/23/12 01:20	1
Barium	ND		0.010		mg/L		08/22/12 15:55	08/23/12 01:20	1
Cadmium	ND		0.010		mg/L		08/22/12 15:55	08/23/12 01:20	1
Chromium	ND		0.010		mg/L		08/22/12 15:55	08/23/12 01:20	1
Lead	ND		0.050		mg/L		08/22/12 15:55	08/23/12 01:20	1
Selenium	ND		0.050		mg/L		08/22/12 15:55	08/23/12 01:20	1
Silver	ND		0.020		mg/L		08/22/12 15:55	08/23/12 01:20	1
Copper	ND		0.020		mg/L		08/22/12 15:55	08/23/12 01:20	1
Zinc	ND		0.020		mg/L		08/22/12 15:55	08/23/12 01:20	1

Lab Sample ID: LCS 250-9069/2-A
Matrix: Solid
Analysis Batch: 9122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9069

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.09		mg/L		109	85 - 115
Barium	5.00	4.88		mg/L		98	85 - 115
Cadmium	0.500	0.514		mg/L		103	85 - 115
Chromium	1.00	0.990		mg/L		99	85 - 115
Lead	1.00	1.01		mg/L		101	85 - 115

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 250-9069/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 9122 **Prep Batch: 9069**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	1.00	1.07		mg/L		107	85 - 115
Silver	0.500	0.516		mg/L		103	85 - 115
Copper	1.00	0.981		mg/L		98	85 - 115
Zinc	1.00	1.05		mg/L		105	85 - 115

Lab Sample ID: 250-5986-1 MS **Client Sample ID: T1**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 9122 **Prep Batch: 9069**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.21	1.40		mg/L	☼	114	75 - 125
Barium	1.7		6.03	7.77		mg/L	☼	101	75 - 125
Cadmium	ND		0.603	0.654		mg/L	☼	107	75 - 125
Chromium	ND		1.21	1.25		mg/L	☼	103	75 - 125
Lead	0.23		1.21	1.50		mg/L	☼	106	75 - 125
Selenium	ND		1.21	1.38		mg/L	☼	112	75 - 125
Silver	ND		0.603	0.645		mg/L	☼	107	75 - 125
Copper	0.12		1.21	1.34		mg/L	☼	101	75 - 125
Zinc	1.9		1.21	3.19		mg/L	☼	108	75 - 125

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LCS 250-9119/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 9138 **Prep Batch: 9119**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00519		mg/L		104	85 - 115

Lab Sample ID: MB 250-9007/3-B **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 9138 **Prep Batch: 9119**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/12 14:37	08/23/12 21:16	1

Lab Sample ID: 250-5986-1 MS **Client Sample ID: T1**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 9138 **Prep Batch: 9119**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00500	0.00531		mg/L		106	75 - 125

Lab Sample ID: 250-5986-1 MSD **Client Sample ID: T1**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 9138 **Prep Batch: 9119**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00529		mg/L		106	75 - 125	0	20

QC Sample Results

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 250-9127/10-A
Matrix: Solid
Analysis Batch: 9152

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9127

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.098		mg/Kg		08/23/12 16:56	08/24/12 09:40	1

Lab Sample ID: LCS 250-9127/11-A
Matrix: Solid
Analysis Batch: 9152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9127

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.619	0.643		mg/Kg		104	80 - 120

Lab Sample ID: 250-5986-1 MS
Matrix: Solid
Analysis Batch: 9152

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 9127

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.26		0.726	1.07		mg/Kg	☼	110	75 - 125

Lab Sample ID: 250-5986-1 MSD
Matrix: Solid
Analysis Batch: 9152

Client Sample ID: T1
Prep Type: Total/NA
Prep Batch: 9127

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.26		0.707	0.985		mg/Kg	☼	102	75 - 125	8	40

Method: D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Lab Sample ID: 250-5987-A-2 DU
Matrix: Solid
Analysis Batch: 8967

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	78		78		%		0.08	20

Lab Sample ID: 250-5986-A-1 DU
Matrix: Solid
Analysis Batch: 9016

Client Sample ID: 250-5986-A-1 DU
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	81		79		%		1	20

Certification Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

1 2 3 4 5 6 7 8 9 10 11

Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	OR00040	06-30-13
Alaska (UST)	State Program	10	UST-012	12-26-12
California	State Program	9	2597	09-30-13
Oregon	NELAC	10	OR100021	01-09-13
USDA	Federal		P330-11-00092	02-17-14
Washington	State Program	10	C586	06-23-12

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-13
A2LA	ISO/IEC 17025		2907.01	10-31-13
Alabama	State Program	4	40730	09-30-12
Alaska (UST)	State Program	10	UST-30	04-05-13
Arizona	State Program	9	AZ0713	12-19-12
Arkansas DEQ	State Program	6	88-0687	06-01-13
California	State Program	9	2513	08-31-14
Colorado	State Program	8	N/A	09-30-12
Connecticut	State Program	1	PH-0686	09-30-12
Florida	NELAC	4	E87667	06-30-13
Georgia	State Program	4	N/A	06-30-12
Idaho	State Program	10	CO00026	09-30-12
Illinois	NELAC	5	200017	04-30-13
Iowa	State Program	7	370	12-01-12
Kansas	NELAC	7	E-10166	04-30-13
Louisiana	NELAC	6	30785	06-30-13
Maine	State Program	1	CO0002	03-03-13
Maryland	State Program	3	268	03-31-13
Minnesota	NELAC	5	8-999-405	12-31-12
Nevada	State Program	9	CO0026	07-30-13
New Hampshire	NELAC	1	205310	04-28-13
New Jersey	NELAC	2	CO004	06-30-13
New Mexico	State Program	6	N/A	06-30-12
New York	NELAC	2	11964	04-01-13
North Carolina DENR	State Program	4	358	12-31-12
North Dakota	State Program	8	R-034	06-30-13
Oklahoma	State Program	6	8614	08-31-13
Oregon	NELAC	10	CO200001	01-16-13
Pennsylvania	NELAC	3	68-00664	07-31-13
South Carolina	State Program	4	72002	06-30-12
Tennessee	State Program	4	TN02944	09-30-12
Texas	NELAC	6	T104704183-08-TX	09-30-12
USDA	Federal		P330-08-00036	02-08-14
Utah	NELAC	8	QUAN5	06-30-13
Virginia	NELAC	3		06-14-13
Washington	State Program	10	C1284	08-03-13
West Virginia DEP	State Program	3	354	11-30-12
Wisconsin	State Program	5	999615430	08-31-13
Wyoming (UST)	A2LA	8		10-31-13

Method Summary

Client: GeoPro Geologic Services
Project/Site: Calbag Stormwater Upgrade

TestAmerica Job ID: 250-5986-1

Method	Method Description	Protocol	Laboratory
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL DEN
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL PRT
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL PRT
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	TAL PRT
6010B	Metals (ICP)	SW846	TAL PRT
7470A	Mercury (CVAA)	SW846	TAL PRT
7471A	Mercury (CVAA)	SW846	TAL PRT
D2216-80	Percent Dry Weight (Solids) per ASTM D2216-80	ASTM	TAL PRT

Protocol References:

ASTM = ASTM International

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL PRT = TestAmerica Portland, 9405 SW Nimbus Ave., Beaverton, OR 97008, TEL (503)906-9200

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 — 42[illegible] — 210
11922 E. First Ave, Spokane, WA 99206-5302 — 50[illegible] — 290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 — 50[illegible] — 210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 — 90[illegible] — 210

Loc: 250
5986

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoPro LLC
REPORT TO: ADDRESS: PO Box 26 BattleGround WA 98604
PHONE: 3606661465 ~~FAX:~~ geopro@comcast.net
PROJECT NAME: Calbag Stormwater Upgrade
PROJECT NUMBER: 080820
SAMPLED BY: P. Kent

INVOICE TO: GeoPro LLC PO Box 26 BattleGround WA 98604
P.O. NUMBER:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | ~~3~~ (X) | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | ~~3~~ (X) | 2 | 1 | <1
OTHER Specify:
* *Turnaround Requests less than standard may incur Rush Charges.*

PRESERVATIVE / REQUESTED ANALYSES

#	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TSC 8270-C SIM inc Phthalates	PCBs as Aroclors TSC	Total Metals 12	HCID	TCLP								MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	T1	8/17/12 1450	X	X	X	X	X								S	2		
2	T2	8/17/12 1445	X	X	X	X	X								S	2		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

RELEASED BY: [signature]
PRINT NAME: R. Kent FIRM: GeoPro LLC DATE: 8/20/12 TIME: 1430
RECEIVED BY: [signature]
PRINT NAME: Tom Kreuse FIRM: TAP DATE: 08/20/12 TIME: 1430

RELEASED BY:
PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY:
PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: 1R/G/B
TEMP: 4.2
PAGE OF

TAL-1000(0408)

Login Sample Receipt Checklist

Client: GeoPro Geologic Services

Job Number: 250-5986-1
SDG Number:

Login Number: 5986
List Number: 1
Creator: Krause, Thomas

List Source: TestAmerica Portland

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: GeoPro Geologic Services

Job Number: 250-5986-1
SDG Number:

Login Number: 5986
List Number: 1
Creator: Cofoid, Stephen T

List Source: TestAmerica Denver
List Creation: 08/30/12 11:58 AM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

Appendix L

Stormwater Management Report

2495 NW Nicolai Street, October 2011

Stormwater Management Report
Calbag Metals Company
2495 NW Nicolai Street
Portland, Oregon

Prepared for
Calbag Metals Company

October 10, 2011
15720-01

HARTCROWSER
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HARTCROWSER

Stormwater Management Report
Calbag Metals Company
2495 NW Nicolai Street
Portland, Oregon

Prepared for
Calbag Metals Company

October 10, 2011
15720-01

Prepared by
Hart Crowser, Inc.

Jill Kiernan, PE
Associate Engineer

Richard D. Ernst, RG
Principal

8910 SW Gemini Drive
Portland, Oregon 97008-7123
Fax 503.620.6918
Tel 503.620.7284

CONTENTS

CONTENTS (Continued)

TABLES

FIGURES

APPENDICES

DESIGNER'S CERTIFICATION AND STATEMENT

I hereby certify that this Stormwater Management Report (excluding Appendices B and C) for the Calbag Metals Company facility at 2495 NW Nicolai Street in Portland, Oregon, has been prepared by me or under my supervision and meets minimum standards of the City of Portland and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.

Name: Jill A. Kiernan, PE

Registration No.: 15499PE

State: Oregon

Date: October 10, 2011

REGISTERED PROFESSIONAL ENGINEER
15499PE
Jill A. Kiernan
OREGON
July 25, 1991
JILL A. KIERNAN
RENEWAL DATE: 6/30/2013

STORMWATER MANAGEMENT REPORT
CALBAG METALS COMPANY
2495 NW NICOLAI STREET
PORTLAND, OREGON

1.0 INTRODUCTION

This report presents the proposed stormwater collection, conveyance, and treatment system upgrades for the Calbag Metals Company (Calbag) facility at 2495 NW Nicolai Street in Portland, Oregon. Figure 1 shows the location of the facility. The stormwater system improvements were selected and designed using the Performance Approach methodology in accordance with the City of Portland's (City) Stormwater Management Manual (SWMM), Version 4 (City of Portland, 2008). The Performance Approach methodology was selected for use in sizing the stormwater system components because stormwater will be treated in a StormwateRx treatment system that has not been approved by the City.

A StormwateRx treatment system will be installed to treat the combined runoff volume from three of the five drainage basins on the site. The StormwateRx treatment system includes a Clara® clarifier system to remove heavy solids and oil, and an Aquip® enhanced media filtration system to remove fine solids and dissolved metals. A coalescing plate oil/water separator will also be installed between the Clara® and Aquip® units to provide additional removal of sediments and oil from stormwater. The StormwateRx treatment system has been installed at numerous industrial facilities across the Pacific Northwest, including an existing system on the north end of the Calbag property, and has been successful in consistently removing desired pollutants to below National Pollutant Discharge Elimination System (NPDES) 1200-Z industrial stormwater general (ISG) permit discharge benchmarks and effluent limitations. The Washington State Department of Ecology (Ecology) has recognized the StormwateRx Aquip® systems as an effective technology for installation at Puget Sound boatyard facilities to address dissolved metals in stormwater discharges.

This Stormwater Management Report provides an overview of the project and site description in Section 2.0, including a description of operations, site drainage and the current stormwater management systems, proposed cleanup actions required by the Oregon Department of Environmental Quality (DEQ), and summary of the proposed stormwater system upgrades. Section 3.0 describes the design of the stormwater system components, including the methodology, analysis, and engineering conclusions. Section 4.0 presents a detailed description of the proposed stormwater collection and conveyance system upgrades, including catch basins and piping; and the proposed treatment system that includes a StormwateRx Clara® clarifier, a Vortclarex® coalescing plate oil/water separator, manufactured by Contech Stormwater Solutions, and a StormwateRx Aquip® enhanced media filtration unit. A description of the Aquip® system treatment process, operation, and expected performance is also provided. Operation and maintenance of the stormwater system components are identified and described in Section 5.0. Section 6.0 addresses the special circumstances for flow control and source control requirements. Appendix A contains the Engineering Drawings for the stormwater upgrades that will be included with the building permit application for the project. Appendix B includes the equipment specifications for the treatment system components. Appendix C contains the structural drawings and details for the Aquip® unit concrete pad. Appendix D includes the forms for the Special Circumstance Review. Engineering calculations are provided in Appendix E.

2.0 PROJECT OVERVIEW AND SITE DESCRIPTION

The following sections provide a description of the site and summary of operations (Section 2.1); a description of the current site drainage and stormwater management (Section 2.2); environmental investigations that have been completed at the site and proposed cleanup actions (Section 2.3); and a summary of the proposed stormwater system upgrades for the facility (Section 2.4).

2.1 Site Description and Operations

The Calbag facility consists of 1.68 acres of developed land and 0.23 acres of undeveloped land located at 2495 NW Nicolai Street in Portland, Oregon (Figure 1). The developed portion of the site is paved and contains several buildings including a corporate office building, a general storage building, an open shed with a flat metal roof, and a processing warehouse (Figure 2). The warehouse is a flat-roofed wood and steel-framed building with concrete exterior walls and a concrete foundation that covers 67,281 square feet. The site is accessed from the south via entrances from NW Nicolai Street and from the west via an entrance from NW 25th Place. The back lot portion of the site is leased from the City and includes an engineered cap that was constructed under the Oregon Department of Environmental Quality (DEQ) oversight as part of the Guilds Lake site remediation (Figure 2).

The property is zoned as heavy industrial (IH) by the City of Portland (City) Bureau of Planning and Sustainability (http://www.portlandmaps.com), and is expected to remain as heavy industrial into the foreseeable future. The site is located in an area of northwest Portland surrounded by heavy industry as past and current land use. This area is also within the Guild's Lake Industrial Sanctuary Plan District, formalized through adoption of Ordinance No. 176092 by the Portland City Council on December 21, 2001. An industrial sanctuary preserves land for long-term industrial use.

The nearest surface water to the site is the Willamette River, located approximately one-half mile to the northeast. No surface water features are present on the site. The site is underlain with silt, sand, and clay alluvial sediments deposited by the Willamette River. Groundwater is present beneath the property at depths of greater than 40 feet below the ground surface as measured in on-site monitoring wells, and flows in a northward direction toward the Willamette River. The topography of the site is relatively flat.

The facility is owned by 2495 Nicolai LLC and operated by Calbag. The back lot area is leased by Calbag from the City. Calbag has operated at this location since the mid 1940s as a nonferrous scrap metal recycling business. Calbag purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The primary metals purchased are aluminum, brass, and stainless steel, with smaller amounts of other materials such as zinc alloys, nickel alloys, lead, titanium, magnesium, and copper. The metals arrive at the facility in various forms, including sheets, plates, piping, castings, fabricated pieces, and wire. Hazardous materials are not accepted, including batteries or items that may contain contaminants such as mercury or polychlorinated biphenyls (PCBs). Fabrication does not occur at the facility.

Calbag's operations are predominantly indoors, with all outdoor areas paved. The primary outdoor activity at the facility is the delivery of scrap metals by truck or customer private vehicles, and unloading and loading of the scrap metal. Most of the sorting and processing of the scrap metal takes place indoors (inside the warehouse building) or under the canopy. Materials waiting to be sorted or packaged are stored loose in piles, drums, boxes, or hoppers. Outdoor storage is generally limited to full and empty hoppers, uncovered storage piles separated by concrete block walls, empty steel drop-boxes, some baled metals, and trucks. Most loading and unloading of materials takes place on covered docks around the buildings.

Typical pollutant sources to the site's stormwater include the materials stored outside in hoppers or boxes, including aluminum solids, copper and lead from radiators, insulated aluminum wire, insulated copper wire, stainless steel solids and borings, and iron and steel solids and borings. The only loose materials exposed to stormwater are aluminum and stainless steel solids, and insulated wire. Garbage, wood from pallets, and cardboard are also stored in outside locations and have the potential for contacting site stormwater. Potential pollutants from these sources that could be found in the site's stormwater include copper, lead, zinc, oil and grease, and sediments.

Best management practices (BMPs) to minimize pollutant impacts to the site's stormwater are routinely implemented at the facility and include sweeping and catch basin cleanouts. The back lot is swept daily with a power sweeper if weather conditions permit. Loading docks are swept manually every day. Catch basins are equipped with filter inserts and are regularly inspected and cleaned quarterly.

2.2 Site Drainage and Stormwater Management

Stormwater at the facility is managed in five runoff basins, separated by relatively flat and indistinct drainage divides, referred to as the north, northwest, west, central, and east drainage basins. Figure 2 identifies locations of facility drainage basins, catch basins, and outfalls.

The north drainage basin includes the areas to the north of the warehouse building in the back lot. Stormwater collecting in the north basin drains to one of two catch basins, CB-1 and CB-2, then is routed through a below-grade coalescing plate oil/water separator, and pumped to an existing StormwateRx Aquip® aboveground enhanced filtration treatment system for the removal of total suspended solids (TSS) and metals. Treated stormwater is discharged to the City's stormwater sewer system, which discharges into the Willamette River via Outfall #16. Calbag has obtained an NPDES 1200-Z ISG permit for these stormwater discharges to the City's stormwater system.

The northwest drainage basin includes two tax lots, 1500 and 1600, used for storage of steel drop-boxes and treatment of process wastewater. Stormwater collecting in this basin drains to catch basin CB-3 and discharges by gravity flow through a 6-inch cast iron pipe directly to the City's combined sanitary/stormwater sewer overflow (CSO) system along NW 25th Place without treatment.

The west drainage basin is comprised of the paved materials handling area on the west end of the facility and includes tax lots 1700, 1800, and 1900, and the western portions of tax lot 2000. Stormwater collecting in this basin drains to catch basin CB-4 and is routed through an oil/water separator prior to discharge through a 4-inch pipe to the CSO along NW 25th Place.

The central drainage basin includes the northwest portion of the warehouse building roof, the NW 25th Avenue alley, the eastern portion of tax lot 2000, and portions of the paved areas to the northwest of the warehouse building. Stormwater in the central basin drains to catch basin CB-5 and discharges by gravity flow directly to the City's CSO system along NW 25th Place without treatment. The line connecting CB-5 to the CSO is an 8-inch concrete pipe, but is old and deteriorated, and in need of repair or replacement.

The east basin includes the northeast, southeast, and southwest portions of the warehouse building roof, and the paved parking and truck unloading/loading area to the east of the warehouse. Stormwater in the east basin drains to catch basin CB-6 or sheet flows to NW Nicolai Street. Stormwater collecting in CB-6 discharges to a sanitary sewer along NW Nicolai Street, also without any pretreatment.

Additional details regarding site operations, stormwater conveyance, and potential pollutants are presented in Calbag's Stormwater Pollution Control Plan (SWPCP). The SWPCP is maintained at the facility and is available for agency review.

2.3 Environmental Investigations and Proposed Cleanup Actions

Environmental investigations have been completed at the Calbag facility under the oversight of the DEQ's Voluntary Cleanup Program (VCP). A site investigation was conducted to evaluate the potential presence of site contaminants in soil and groundwater beneath the site. In addition, DEQ required a stormwater Source Control Evaluation (SCE) for this site because of its proximity and connection via the stormwater pathway to the Portland Harbor Superfund Site, and the potential for the site to be a source of PCBs to the Willamette River. The results of the SCE indicated that PCBs are present in catch basin sediments and on asphalt and concrete surfaces in limited areas of the site and have the potential to leave the site via the stormwater pathway.

In response to their concerns with PCBs in the stormwater pathway, the DEQ requested that Calbag complete a Focused Feasibility Study (FFS) to identify and evaluate alternatives that address potential sources of the PCBs in stormwater. A FFS was submitted to the DEQ in April 2011 for review and approval (GeoPro, 2011). The document is currently undergoing DEQ review.

The proposed alternative presented in the FFS that addresses the PCBs in stormwater includes the following components:

- Cleaning of asphalt pavement and concrete surfaces inside the warehouse building to remove PCB particles adhering to surfaces.

- Source control stormwater treatment system modifications to include:
  - abandoning and plugging the existing discharge line from catch basin CB-5 to the CSO,
  - installing a new discharge line from CB-5 to the oil/water separator,
  - replacing CB-5 with a larger capacity catch basin, and
  - installing a new treatment system (StormwateRx system) downstream of the oil/water separator to provide removal of PCBs in stormwater prior to discharge to the City's CSO system.

- Installing a cover system for the metal stockpiles located in the outdoor bulk storage area along NW 25th Avenue (alley) and the storage bins across from the titanium tent area.

- Replacing approximately 2,900 square feet (sf) of concrete surface in the tent area with new concrete.

- Stormwater monitoring to include preparation of a stormwater monitoring plan and 3 years of stormwater sampling, that would be supplemental to the required 1200-Z ISG permit sampling. The purpose of the stormwater monitoring is to evaluate the effectiveness of the implemented remedy and provide data for the DEQ Source Control Decision for the site.

- Preparing a BMP Manual to provide methods and protocols to minimize future contamination of site stormwater and effectively maintain the stormwater collection, conveyance, and treatment systems. The BMP Manual would be incorporated into the SWPCP required by the 1200-Z ISG permit.

- Repaving approximately 11,000 sf of the asphalt surface in the NW 25th Avenue area.

- Repaving approximately 3,900 sf of the asphalt in the titanium storage tent area.

- Sealing approximately 29,000 sf of the low-traffic areas of concrete floor in the warehouse building.

The proposed alternative described above was evaluated in the FFS with six other alternatives in accordance with the criteria specified in the Oregon Administrative Rules (OAR), Chapter 340, Division 122, Rules 0085 and 0090. The proposed alternative was determined to be a protective remedy, and the most cost-effective and effective of the seven alternatives in addressing the PCB-impacted surface areas, while minimizing implementation risk and disruptions to the day-to-day operations at the Calbag facility.

None of the components of the proposed remedial action will impact the Guilds Lake site engineered cap that encompasses the back lot area of the site.

2.4 Proposed Stormwater System Upgrades

Stormwater system upgrades are proposed for the northwest, west, and central drainage basins. The total area of these three basins is approximately 0.92 acres. All three drainage areas currently discharge through separate pipes to the CSO along NW 25th Place. The proposed stormwater system upgrades include abandoning the line from CB-5 and continued use of the two remaining discharge pipes. There will be no increase in the drainage areas and no net increase in the impervious surface areas that discharge to the CSO as a result of these proposed system upgrades.

Currently, stormwater collecting in the northwest and central basins is discharged without treatment to the CSO. The proposed stormwater collection and conveyance system upgrades include the installation of new piping and catch basins to collect and route stormwater from all three of these basins to centralized treatment in the new StormwateRx treatment system prior to discharge to the CSO. The proposed layout of the stormwater system components is shown on the Engineering Drawings (Appendix A – Sheet 3).

The stormwater treatment system will be a StormwateRx treatment system with a Clara® clarifier system to remove heavy solids and oil, and an Aquip® enhanced media filtration system to remove fine solids, dissolved metals, and PCBs. A new coalescing plate oil/water separator will also be installed between the Clara® and Aquip® units to provide additional removal of sediments and oil from stormwater. The Clara® unit, new oil/water separator, and a pump vault will be installed below grade near CB-3 in the northwest drainage basin. The new Aquip® unit will be installed aboveground near CB-4 in the west drainage basin. The placement of these units was based on available space, location of existing utilities, and surface grades.

The main components of the stormwater collection and conveyance system upgrades include the following:

- Abandoning the existing 8-inch diameter concrete pipe from a manhole near CB-5 to the CSO.

- Replacing CB-5 with a larger, double-chambered catch basin to collect sediments.

- Connecting CB-5 with a new 8-inch diameter polyvinyl chloride (PVC) pipe to a new manhole installed near CB-4.

- Connecting CB-4 to the new manhole.

- Connecting the new manhole to the new Clara® unit with a new 8-inch PVC pipe.

- Removing CB-3 and replacing with an inlet to the new Clara® unit.

Additional details on the components are further described in Section 4.1 and provided in the Engineering Drawings (Appendix A).

3.0 STORMWATER SYSTEM DESIGN

The proposed stormwater system upgrades are subject to the requirements of the City's SWMM that address infiltration and discharge, flow control, and pollution reduction. These requirements and how the project satisfies these requirements are described in Section 3.1. In addition, the SWMM requires stormwater management facilities to be sized in accordance with one of three methodologies in order to satisfy the SWMM requirements for infiltration and discharge, flow control, and pollution reduction. The Performance Approach was used for sizing the StormwateRx treatment system and is described in Section 3.2.

3.1 Stormwater Management Manual Requirements

The following sections describe how the proposed stormwater system upgrades were evaluated with respect to the City's SWMM requirements for stormwater infiltration and discharge hierarchy (Section 3.1.1); flow control (Section 3.1.2); and pollution reduction (Section 3.1.3).

3.1.1 Stormwater Infiltration and Discharge Hierarchy

Site conditions and circumstances were preliminarily evaluated in accordance with Section 1.3.1 of the SWMM to assess the extent of on-site infiltration and off-site discharge of stormwater that could occur at the site. In accordance with the stormwater infiltration and discharge hierarchy criteria in the SWMM, the site would be considered Category 4, with no infiltration and all off-site discharge.

The entire site is paved with either asphalt or concrete. The pavement is generally in good condition and provides little infiltration of stormwater. The stormwater at the site drains to one of five drainage basins as described in Section 2.2. The proposed stormwater system upgrades will collect and treat stormwater from the northwest, west, and central drainage basins in a centralized StormwateRx treatment system prior to discharge to the CSO through two existing connections. There will be no increase in the drainage areas and no net increase in impervious surfaces as a result of these proposed system upgrades. Additionally, there is no net increase in the total stormwater flowrates or volume discharged to the CSO from these three drainage basins.

There are environmental concerns and space constraints that limit the opportunities for stormwater infiltration at this site. The back lot portion of the site includes the engineered cap that was constructed as part of the Guilds Lake site remediation project. There are restrictions on activities, such as excavation, that would compromise the integrity of the cap. Construction of an infiltration facility within the cap footprint would compromise integrity of the cap and create the potential for contaminant mobilization to underlying groundwater.

Remaining areas of the site are occupied by buildings or used for material storage, sorting, loading, and transfer that are essential for Calbag operations. Large trucks and forklifts are used for material loading and transfer operations that require unobstructed areas for maneuverability and safety. Setback requirements also limit potentially useable areas for infiltration facilities.

For these reasons, infiltration was not considered feasible for this site and therefore, not further evaluated. Stormwater discharge from the site will be to the CSO through two existing connections. Because there will be no increase in drainage basin size and no increase in impervious surface area, there will be no increase in the stormwater volume discharged to the CSO from these areas.

3.1.2 Flow Control Requirements

Section 1.3.2 of the SWMM requires on-site flow control of stormwater through the use of retention and detention facilities to the maximum extent feasible to reduce stormwater discharge impacts to downstream water bodies or receiving conveyance systems. For sites that discharge stormwater to combined sewers, on-site infiltration is required to the maximum extent feasible. If total infiltration is not feasible, then on-site detention facilities are required to control peak flows from the post-development 25-year, 24-hour storm event to the 10-year predevelopment peak flow.

As previously discussed in Section 3.1.1, infiltration is not feasible at this site because of environmental concerns and space constraints. Space constraints also limit available areas for large aboveground detention facilities. Belowground detention facilities are also not feasible because of limited areas available, stability concerns with deep excavations near building foundations, and presence of underground utilities. Stormwater flows are currently discharged to the CSO and the planned stormwater system upgrades include discharge to the CSO through two existing connections with no net increase in stormwater flowrates or volumes discharged to the CSO.

3.1.3 Pollution Reduction Requirements

Section 1.3.3 of the SWMM specifies pollution reduction requirements for stormwater to reduce impacts of pollutants carried from impervious surfaces to downstream water bodies or receiving conveyance systems. The pollution reduction requirement for all projects is a 70 percent reduction of TSS from 90 percent of the average annual runoff. For watersheds with established total maximum daily loads (TMDLs) or on DEQ's 303(d) list of impaired waters, stormwater management facilities must be capable of reducing the pollutants of concern.

The SWMM presents three methodologies for sizing the stormwater management facility to meet the requirements for infiltration and discharge, flow control, and pollution reduction. For the Calbag facility, a StormwateRx treatment system was selected to remove suspended solids, oils, dissolved metals, and PCBs from stormwater prior to discharge. This treatment system is considered a manufactured treatment technology and is not included on the City's approved vendor list. For this reason, the Performance Approach per Section 2.2.3 of the SWWM was used in sizing the StormwateRx treatment system to ensure the pollution reduction requirements are met. In addition, because the Calbag facility is within the Willamette River watershed with established TMDLs (mercury) and 303(d) list parameters (PCBs and PAHs), the treatment system will need to reduce these pollutants of concern if present in the site stormwater.

3.2 Performance Approach Methodology

The Performance Approach was used for sizing the StormwateRx treatment system to satisfy the SWMM requirements for pollution reduction. Treatment system sizing is described in Section 3.2.1. Conveyance system sizing is presented in Section 3.2.2.

3.2.1 Treatment System Sizing

The StormwateRx treatment system was sized using the Performance Approach as a flowrate-based pollution reduction facility. In accordance with Section 1.3.3 of the SWMM, the system was sized using the Rationale Method and a design storm event with a rainfall intensity of 0.19 inches per hour for a time of concentration of 5 minutes. The Rationale Method calculates a flowrate using the formula: $Q = C \times I \times A$, where Q is the flowrate in cubic feet per second (cfs); C is the runoff coefficient (dimensionless); I is the rainfall intensity in inches per hour; and A is the area in acres. For the Calbag facility, the runoff coefficient used was 0.9 for paved surfaces. The total area of the northwest, west, and central drainage basins draining to the new treatment system is 0.92 acres. Using these values, a design flowrate was calculated to be 0.157 cfs or 71 gallons per minute (gpm). The Aquip® unit was sized using this design flowrate. The Clara® and oil/water separator units were sized using the design flowrate with a factor of safety of 2, or 150 gpm, to provide for additional capacity for the pretreatment of stormwater.

3.2.2 Conveyance System Sizing

The new piping and catch basins were sized using the 10-year storm event in accordance with the requirements of the City's Sewer and Drainage Facilities Design Manual (City of Portland, 2007). The Rationale Method was used to calculate flowrates, assuming a rainfall intensity of 2.86 inches per hour and a runoff coefficient of 0.88. The areas used in the calculation of flowrates varied for each of the drainage basins; northwest drainage basin was approximately 0.12 acres, the west drainage basin approximately 0.17 acres, and the central drainage basin approximately 0.63 acres.

Pipe sizes were derived using the calculated flowrates above and the Manning's Equation assuming pipes flowing full, a roughness coefficient of 0.013 for smooth pipes, and average estimated pipe slopes. The pipe slopes were estimated for each piping run from catch basin or manhole inlet and outlet elevations. The new pipes specified will be polyvinyl chloride (PVC) ASTM D3034, SDR 35 and 26 per the Sewer and Drainage Facilities Design Manual or equivalent. Engineering calculations are provided in Appendix E.

4.0 STORMWATER SYSTEM UPGRADES

The StormwateRx system was selected for the Calbag facility to remove suspended solids, oils, dissolved metals, and PCBs from stormwater prior to discharge. The treatment system includes three main components; the Clara®

clarifier unit, a VortClarex oil/water separator, and the Aquip® enhanced filtration unit that will be installed as a treatment train. The StormwateRx Aquip® system involves enhanced filtration using a combination of sorptive and inert filter media components, and also provided the best performance at the lowest cost for dissolved metals, based on Washington Ecology's recent All Known, Available, and Reasonable Treatment (AKART) economic analysis. This AKART analysis was presented in Ecology's April 2010, Economic Impact Analysis for the Draft NPDES Wastewater Discharge General Permit for Boatyards (Ecology, 2010). As of the April 2010 publication date, the StormwateRx system had been installed at seven Puget Sound boatyard facilities.

Selection of the StormwateRx treatment system in conjunction with planned conveyance system upgrades is based on sound engineering justification through the use of performance data from the existing StormwateRx treatment system for Calbag's north drainage basin and pilot study data from the Boatyard Stormwater Treatment Technology Study (Taylor Associates, 2008). Permit monitoring data from Calbag's existing Aquip® treatment system show that the system consistently meets current benchmarks for all permit parameters. Table 1 presents of summary of the permit monitoring results since the current system was installed in 2008. Feasibility and expected performance results are further based on installation of StormwateRx systems at boatyard and industrial facilities in Puget Sound and elsewhere. The proposed treatment system is intended to reduce pollutant concentrations as low as practicable to meet 1200-Z ISG permit benchmarks and reduce concentrations of PCBs in stormwater to acceptable levels.

The StormwateRx Aquip® treatment system will be installed in the west basin to treat the combined runoff volumes from the northwest, west, and central drainage basins. Treated stormwater will be discharged through an existing connection to the CSO. Flows exceeding design flowrate of 71 gpm will be bypassed through another existing connection to the CSO.

To provide for the centralized treatment of stormwater in the new StormwateRx system, upgrades to the stormwater collection and conveyance systems in the northwest, west, and central basins are required to route stormwater to the treatment system. These upgrades are described in Section 4.1. A description and details of the Clara® clarifier unit are provided in Section 4.2. Section 4.3 presents a description and details of the VortClarex oil/water separator. Section 4.4 describes the pump vault and pump. Section 4.5 presents a description and details on the Aquip® unit. The expected performance of the Aquip® treatment system is provided in Section 4.6.

4.1 Stormwater Collection and Conveyance System Upgrades

Stormwater collection and conveyance system upgrades to be implemented at the facility include the installation of new catch basins and piping, and reconnection of existing catch basins. The purpose of these upgrades is to convey stormwater from the northwest, west, and central drainage basins to a centralized location for treatment. The treatment system includes three main components; the Clara® clarifier unit, a VortClarex oil/water separator, and the Aquip® enhanced filtration unit. The Clara® unit, new oil/water separator, and an associated pump vault will be installed below grade near CB-3 in the northwest drainage basin. The new Aquip® unit will be installed aboveground near CB-4 in the west drainage basin. High flow bypasses from the Clara® and oil/water separator units will be directed to the existing 6-inch discharge pipe that currently connects CB-3 to the CSO. Design flowrates will be pumped to the Aquip® unit for additional treatment. Treated water from the Aquip® unit will be discharged to the CSO through the existing 4-inch discharge pipe currently connected to outlet of the existing oil/water separator.

In addition, to address concerns for potential PCB mobilization to the CSO, the existing line from the manhole near catch basin CB-5 to the CSO will be abandoned in place.

4.1.1 Abandonment of Line from CB5 Manhole to CSO

The existing CB-5 catch basin and a roof drain from the northwest corner of the warehouse building currently discharge into a manhole, which connects to the CSO through an existing 8-inch diameter concrete pipe that is owned by the City. The pipe runs approximately 135 feet from the manhole to the CSO, mostly underneath an adjacent building foundation. A recent video survey of the 8-inch line completed during the site investigation showed it to be in poor condition and in need of replacement or repair. To address DEQ concerns regarding the potential for this discharge pipe to release PCB sediments into stormwater, this line will be abandoned in place in accordance with methods specified in the City's Sewer and Drainage Facilities Design Manual. It is proposed to fill the entire length of the pipe with controlled, low-strength material, and plug both the upstream end at the manhole and downstream end at the CSO with concrete.

The existing lines from CB-5 and the roof drain to the manhole will also be abandoned in the same manner. The roof drain will be connected to the new catch basin CB-5 with a new 4-inch PVC pipe.

The proposed piping alignments, profiles, unit details, and pipe trench details are provided in the Engineering Drawings (Appendix A).

4.1.2 Catch Basin CB-5 Modifications

The existing catch basin CB-5 in the central drainage basin is undersized to provide sufficient sediment removal from stormwater. Because this area is used for material storage and sorting, there is a potential for the stormwater runoff from this area to contain greater amounts of sediment. For this reason, a new, larger-capacity catch basin will be installed to replace the existing one. The old unit will be emptied, and cleaned of sediment and residual water prior to its removal.

The new catch basin is a Gibson Steel Sand Collector Catch Basin, or equivalent, with a double chamber to provide a larger capacity for sediment removal and reduce the sediment loading to downstream treatment units. The new unit is 24 inches wide by 48 inches long and 44.5 inches deep and will be installed in the approximate location of the old unit. The new unit includes a heavy duty, traffic-rated steel plate lid and inlet grate and will have an 8 inch diameter outlet. The new catch basin can be fitted with a filter insert to provide additional removal of sediments, if needed.

A new 8-inch, Schedule 40 PVC pipe will be installed from the new CB-5 to a new manhole installed near catch basin CB-4 in the western drainage basin.

4.1.3 Catch Basin CB-4 Area Modifications

Catch basin CB-4 currently drains the western drainage basin and discharges to an existing oil/water separator. The existing oil/water separator will be replaced with a newer, more efficient unit to be installed in the northwest drainage basin near CB-3. The oil/water separator will be cleaned of oil, sediment, and water prior to its removal. The excavated area will be filled in with structural fill and repaved.

A new 24-inch steel manhole will be installed near the CB-4 location. CB-4 will be connected to the new manhole with a 4-inch PVC pipe. In addition, the new 8-inch line from CB-5 will be connected to this manhole. The manhole will connect to the new Clara® unit with an 8-inch PVC pipe.

4.1.4 Catch Basin CB-3 Modifications

The existing catch basin CB-3 in the northwest drainage basin will be removed and replaced with a new inlet to the Clara® unit. The Clara® unit will be installed below grade in the approximate location of CB-3. The inflow chamber of the Clara® unit includes a grated inlet that will be installed at grade level. This grated inlet will serve to collect stormwater from the northwest drainage basin where it will discharge directly into the Clara® unit.

CB-3 will be cleaned of sediment, oil, and water prior to its removal. The portion of the discharge line from CB-3 that will be in the footprint of the Clara® unit will be removed. The remaining portion of the line will be used for overflow discharge from the treatment system as described in the next section.

4.1.5 Treatment System Plumbing and High-Flow Bypass

The Clara® unit, new oil/water separator, and pump vault will be installed below grade in the northwest drainage basin. Stormwater flows from the northwest, west, and central drainage basins will be routed to the inlet of the Clara® unit. The Clara® unit and oil/water separator have a flow through capacity of 150 gpm. Flowrates greater than 150 gpm will bypass the treatment system and be discharged to the CSO connection line running from the former CB-3.

The inlet chamber of the Clara® unit has an internal bypass weir that will bypass peak flows during extreme storm events (i.e., flows greater than 150 gpm) to the existing 6-inch sewer discharge line. Flowrates less than 150 gpm will be routed through the Clara® unit for pretreatment. Treated stormwater is discharged by gravity flow from the outlet chamber of the Clara® unit to the inlet to the oil/water separator with a 6-inch PVC pipe for additional treatment. The outlet of the oil/water separator discharges to the pump vault by gravity flow. The vault will be equipped with a submersible pump to pump stormwater to the Aquip® unit. The pump is sized for the design flowrate of 71 gpm and will pump this flowrate to the Aquip® unit through a 3-inch PVC pipe. The pump vault is also designed with a 4-inch PVC overflow discharge connection to the existing 6-inch sewer discharge line to route flows greater than 71 gpm as bypass. The outlet of the Aquip® unit will discharge to the existing 4-inch CSO discharge line in the west drainage basin with a new 4-inch PVC pipe connection.

4.2 Clara® Unit Description and Details

The StormwateRx Clara® unit is a plug-flow separator system designed to remove heavy solids, oils, and debris by gravity separation. The unit uses a combination of four pre-engineered chambers and has an internal high-flow bypass to effectively trap pollutants and prevent pollutants from being washed out of the system during storms that exceed the treatment design capacity of the Clara® unit. Two of the chambers are settling chambers which alter the flow of the water to allow pollutants to be removed by gravity. Clara® units are typically used when influent concentrations of TSS are greater than 200 mg/L and/or oil is greater than 20 mg/L. For the Calbag facility, the Clara® unit will be used as a pretreatment system, installed upstream of the oil/water separator and the Aquip® filtration unit to improve the function and prolong the maintenance interval of these downstream units.

The Clara® 25C model unit specified for the Calbag facility has a hydraulic capacity of up to 320 gpm. Approximate dimensions of the unit are 8 feet wide, 10 feet long, and 7 feet deep. The sediment storage capacity is approximately 1.8 cubic yards, and the oil and floatable storage capacity is 185 gallons. Plan views, section views, and system piping details of the Clara® 25C unit are provided in the Engineering Drawings (Appendix A).

StormwateRx provided a summary of performance data for the Clara® unit in removing TSS and metals. The performance data were generated through grab samples collected by StormwateRx, consulting engineers, and facility treatment system operators. Median influent, effluent, and removal efficiencies for each of the constituents are provided in Table 2.

4.3 VortClarex Oil/Water Separator Description and Details

The VortClarex oil/water separator, manufactured by Contech Stormwater Solutions, utilizes coalescing media to efficiently remove freely dispersed oil and other liquid pollutants from stormwater. The coalescing media is housed within a precast concrete vault and installed as a belowground structure. The unit includes a baffled inlet compartment, separation chamber consisting of parallel-corrugated plate coalescing media, and clean water outlet chamber. The VortClarex coalescing media has the ability to remove up to 99 percent of free oil droplets as small as 60 microns. Typical total petroleum hydrocarbon concentrations in the effluent are 10 milligrams per liter (mg/L) or less.

The VortClarex VCL40 model unit specified for the Calbag facility has a capacity of up to 150 gpm. Typical dimensions are 4 feet wide, 8 feet long, and 6 feet deep, with a sump depth of 3.75 feet. The unit is equipped with a manhole and hatch to provide access for maintenance. Plan views, section views, and system piping details of the VortClarex VCL40 unit are provided in the Engineering Drawings (Appendix A). Additional vendor-provided design information, specifications, and maintenance requirements for the VortClarex unit are provided in Appendix B.

4.4 Pump Vault and Pump Description and Details

The pump vault is a subgrade concrete vault used to house the treatment system pump. The vault dimensions are 4 feet by 6 feet and approximately 6 feet high.

The pump specified for the treatment system is a submersible, 230 volt, 1 phase pump. The pump is rated for 71 gpm at less than 20 feet of total dynamic head. The vault also contains a double piggyback float switch to turn the pump off for low liquid levels in the vault, and turn the pump on when the liquid level in the vault reaches a specified level. Plan views, section views, and system piping details of the pump vault are provided in the Engineering Drawings (Appendix A).

4.5 Aquip® Treatment Unit Description and Details

The treatment system to be installed includes a StormwateRx Aquip® Model 80SBE unit, an enhanced, passive filtration system that uses a combination of sorptive and inert filtration media to remove TSS, turbidity, heavy metals, nutrients, and organics, such as PCBs, from stormwater. The system is housed in an aboveground, water-tight steel tank that uses a pretreatment chamber followed by a series of layered inert and adsorptive filtration media to effectively trap pollutants. The pollutant removal with the pretreatment chamber occurs by gravity settling and adsorption; pollutant removal with the filtration chamber occurs through a combination of filtration, chemical complexing, co-precipitation, adsorption, absorption, micro-sedimentation, and biological oxidation. The Aquip® unit includes no moving parts and requires no chemicals, making the operation inherently simple and safe.

The Aquip® unit is approximately 9 feet wide, 17 feet long, and 7 feet high. Plan and section views of the unit are provided in the Engineering Drawings (Appendix A). The structural drawings, details, and engineering design calculations for the concrete pad that supports the Aquip® unit were completed by Afghan Associates, Inc., under contract to StormwateRx, and are included in Appendix C.

4.5.1 System Capacity and Estimated Flow Volumes

The Aquip® Model 80SBE unit has a filtration system capacity of 80 gpm, a pretreatment operating rate of 9 gpm per square foot (sf), and a filtration operating rate of 1 gpm/sf. This unit was sized to achieve the pollution reduction standards of the SWMM, using the specified design storm with a rainfall intensity of 0.19 inches per hour. As described in Section 3.2.1, the design flowrate of 71 gpm was calculated from the Rationale Method using the specified rainfall intensity. Because the capacity of the Aquip® Model 80SBE unit is slightly greater than the required minimum size as determined by the SWMM requirements, it has been sufficiently sized to treat stormwater at the facility, with additional excess volume capacity of about 11 percent.

Additional specifications on the surface area and quantity of media used in the Aquip® Model 80SBE filtration system are provided in Table 3. A schematic and flow diagram of the Aquip® treatment system is provided in the Engineering Drawings (Appendix A).

4.5.2 Additional Aquip® Treatment System Details

The following sections summarize information provided by StormwateRx regarding the operation and performance of the Aquip® treatment system.

4.5.2.1 Filtration Media and Chemicals Used in the Treatment Process

The Aquip® enhanced stormwater filtration system uses a combination of high-quality sorptive and inert filtration media. The media used is proprietary, though they are granular or mineral in nature. The Aquip® system configuration for metals facilities, boatyards and other facilities where dissolved metals are the primary concern uses filtration media in series and in a layered configuration. The sequence and character of the media layers result in a pollutant removal "treatment train" within the system. These layers are optimized to reduce industrial stormwater pollutants such as fine particulates and dissolved metals.

In addition to inert and naturally occurring minerals, Aquip® uses a proprietary granular magnesium-based material, a granular aluminum-based material and an organic-based material. None of these granular materials will soften, swell or disintegrate in water and all are nontoxic. Aquip® uses a passive hydraulic flow control regime such that pollutant removal is maximized while stormwater is flowing through the system; this same passive hydraulic flow control allows accumulated stormwater within the structure to drain between storm events.

The amount of materials used in the Aquip® process is unique to each Aquip® model and configuration. The sequence and relative proportions of the filtration media remain the same for all Aquip® stormwater filter models.

4.5.2.2 Provisions for Emergency Overflow

The Aquip® enhanced stormwater filtration system will be installed as an off-line system with stormwater collecting in the pump vault pumped to Aquip®. Stormwater flows by gravity through the Aquip® system which has an internal emergency overflow at the outlet side. Pretreated stormwater would overflow the filtration chamber if the filter bed becomes plugged.

Aquip® is equipped with an external passive overflow level indicator that shows operating conditions of the filter bed. The level indicator provides an indication of whether stormwater has discharged through the emergency overflow pipe in the system. If there is stormwater in the level indicator this indicates the filter bed has reduced filtration capacity and that partially treated stormwater may have overflowed the system.

Normal maintenance inspection (as part of the facility's monthly inspection schedule) would indicate that the filter bed is becoming occluded long before an emergency overflow condition would occur, allowing the owner to plan for maintenance to the system to restore system capacity.

4.5.2.3 Provisions for Oil and Hazardous Material Spill Control or Accidental Discharge Prevention

Aquip® is inherently safe and no spills are possible during operation. Because the filter media is significantly heavier than water and because the flow gradient is downward through the filter bed, solids and the filter media will be retained in the filter structure.

4.5.2.4 Method of Final Sludge Disposal Selected

There is no wastewater sludge associated with the Aquip® enhanced stormwater filtration system. Sediments accumulating in the media filtration bed are typically nonhazardous, and if so, may be disposed in a permitted, nonhazardous RCRA Subtitle D landfill. Sediments accumulating in the media filtration bed will be tested to determine their regulatory status prior to disposal.

4.5.2.5 System Ownership, Operation, and Maintenance

Calbag Metals will purchase the system as the owner, and will operate and maintain the system. StormwateRx will provide guidance to Calbag regarding the proper operation and maintenance procedures.

4.5.2.6 Provisions for Additional Treatment

The Aquip® system alone is expected to generally meet state water quality criteria for stormwater discharges. However, should site conditions, regulations or water quality criteria change in the future, the Aquip® system includes provisions to upgrade with the AquiPlus™ polishing add-on system without additional structural modifications. The AquiPlus™ is a modular upgrade to the Aquip® filtration system that provides added pollutant removal for certain challenging stormwater applications, such as dissolved metals. To increase removal of dissolved metals the AquiPlus™ system is configured with an ion exchange system.

4.6 Expected Performance of the Aquip® Treatment System

The expected performance of the new Aquip® treatment system in removing pollutants from stormwater is described in the following sections. The expected performance based on monitoring data from the existing Calbag Clara® separator and Aquip® enhanced filtration system is presented in Section 4.6.1. StormwateRx provided a performance estimator based on monitoring data from Aquip® systems installed at other similar facilities; this information is provided in Section 4.6.2. A summary of other performance studies is presented in Section 4.6.3. Planned monitoring of the Aquip® treatment system to evaluate performance with respect to the TMDL and 303(d)-listed parameters is described in Section 4.6.4.

4.6.1 Existing Calbag Clara® and Aquip® Treatment System Results

The existing StormwateRx treatment system was installed in the north drainage basin in December 2008, and includes both a Clara® separator and Aquip® enhanced filtration unit. Since its installation, the system effluent has been monitored in accordance with the 1200-Z ISG permit. The discharge monitoring data are provided in Table 1. These results show that the Clara® and Aquip® treatment system has consistently met the permit benchmarks for all permit parameters, including the metals.

Figure 3 provides a box and whisker plot of the stormwater effluent discharge concentrations from before the treatment system was installed (shown as B on the plot) and after the treatment system was installed (shown as A on the plot). The horizontal dashed lines in each plot show applicable 1200-Z ISG permit discharge benchmarks. The top and bottom of each box represent the 75th and 25th percentiles, respectively. The band in the middle of the box represents the 50th percentile or median. The whiskers extend to the upper and lower data points that are within 1.5 times the interquartile range. The dots shown are outliers. The results show that the treatment system has effectively reduced all pollutant parameters to below the permit benchmarks.

Based on the performance of the existing Aquip® treatment system, the proposed Aquip® treatment system was selected as an appropriate technology to remove suspended solids, metals, and organics from the site's stormwater. These results allow confident sizing of the proposed Aquip® treatment system to provide optimal pollutant removal for the northwest, west, and central drainage basins at the Calbag facility.

4.6.2 Performance Estimator

StormwateRx provided a performance estimator for the Aquip® treatment system in removing TSS, oil and grease, and total and dissolved copper. Influent and effluent samples from Aquip® treatment systems from several industrial and boatyard facilities in the Pacific Northwest were collected and analyzed to determine removal efficiencies. These data are provided in Table 4. The table shows average influent concentrations, average effluent concentrations, and average removal efficiencies for each of the constituents. These data indicate that the Aquip® treatment systems were effective in reducing concentrations of TSS, oil and grease, and total and dissolved copper to below applicable boatyard and industrial permit benchmark levels.

Figure 4 provides graphical representation of a quantifiable level of treatment provided by the Aquip® treatment system. The figure is based on an extensive set of sampling data collected from permit compliance monitoring of Aquip® treatment systems installed at various industrial sites, and from the research efforts of StormwateRx. These findings demonstrate that the Aquip® treatment system is capable of providing treatment that meets or exceeds the SWMM pollution control requirements, and removes total and dissolved metals.

StormwateRx performed an Aquip® technology assessment using representative sampling data collected for the Aquip® in over 35 industrial applications. The data set included over 450 discharge samples and influent/effluent sample pairs. Of the 74 influent and effluent samples quantifying TSS, the median TSS removal efficiency for the Aquip® system was 83 percent. Thirty seven samples were collected and analyzed for dissolved copper. Fifty two samples were collected and analyzed for dissolved zinc. The median removal efficiencies for dissolved copper and dissolved zinc were 93 percent and 72 percent, respectively. Based on these findings, the Aquip® treatment system has been given the Conditional Use Level Designation in the State of Washington by Ecology for basic, enhanced, and phosphorus treatment.

4.6.3 Other Performance Studies

A related evaluation of the Aquip® system's performance to effectively remove stormwater pollutants was presented in the Boatyard Stormwater Treatment Technology Study for the State of Washington (Taylor Associates, 2008). Study results indicate that the system was effective in removing pollutants to the Washington boatyard general permit (BGP) benchmark levels. Specific findings included:

- All total copper concentrations in treated effluent were below the current 38 μg/L BGP benchmark. In addition, 13 of 19 composite stormwater samples tested from the study, and 3 of 9 grab sample results met 10 μg/L comparative criteria established for the study. Total copper reduction ranged from 90.3 to 97.1 percent in the composite samples, and 91.5 to 99.2 percent in the grab samples.

- All total lead concentrations in treated effluent were below the 2 μg/L laboratory analytical detection limits. These concentrations are well below the 55.6 μg/L BGP effluent limitation. Total lead reduction ranged from 61.5 and 73.0 percent in the composite samples, and 94.4 percent in the grab samples.

- Effluent TSS concentrations ranged from the laboratory analytical detection limit to 2.0 mg/L for the composite samples, and 1.5 mg/L for the grab samples. These concentrations are below the 21 mg/L BGP benchmark. TSS reduction ranged from 50.0 to 95.8 percent for the composite samples to 48.5 percent to 96.3 percent for the grab samples.

4.6.4 TMDL and 303(d) Listed Parameters

In May 2011, stormwater samples were collected from the influent and effluent of the existing Aquip® treatment system at the Calbag facility to determine its ability to remove PCBs and PAHs from stormwater. Samples were analyzed for PCBs by EPA Method 8082 and PAHs by EPA Method 8270 – Select Ion Method (low-level detection method). The results of this sampling event are provided in Table 5.

All of the PCBs and all but one of the PAHs were not detected in the influent sample. The only PAH detected was phenanthrene at a concentration of 0.101 μg/L. The PCBs and PAHs in the effluent sample were all non-detects. These data indicate that PCBs and PAHs are not significant constituents in the Calbag facility's stormwater.

Additional stormwater monitoring for other TMDL and 303(d)-listed parameters is planned at the Calbag facility. Monitoring will determine the presence and concentration of these parameters in site stormwater, and if present, the effectiveness of the current and new Aquip® treatment systems to remove these parameters.

5.0 OPERATION AND MAINTENANCE

The operation and maintenance (O&M) requirements for the new stormwater treatment system, including the catch basins, the Clara® clarifier unit, VortClarex oil/water separator, and the Aquip® enhanced filtration unit are provided in a separate Operation and Maintenance Plan that was developed for the facility (Hart Crowser, 2011). Calbag Metals assumes the long-term responsibility for conducting and financing the O&M requirements of the O&M Plan. The O&M Plan includes the inspection and maintenance schedules, routine and corrective action procedures, and inspection and maintenance logs.

6.0 SPECIAL CIRCUMSTANCES

As required by the SWMM, special circumstance reviews are required by the City for projects that do not meet the requirements for flow control and/or source controls. The following sections present the information for special circumstance reviews for the stormwater system upgrades.

6.1 Flow Control

The proposed stormwater system upgrades do not meet the requirements for on-site flow control. As previously discussed in Section 3.1.1, infiltration is not feasible or practical at this site because of environmental concerns and space constraints. Space constraints and other factors also limit available areas for large aboveground or belowground detention facilities. Stormwater flows are currently discharged to the CSO and the planned stormwater system upgrades include discharge to the CSO through two existing connections with no net increase in stormwater flowrates or volumes discharged to the CSO.

Because the proposed stormwater system upgrades do not meet the requirements for on-site flow control, a special circumstance review is requested. In accordance with Appendix D.7 of the SWMM, a completed Special Circumstances Form (Form 3) is provided in Appendix D of this report.

6.2 Source Controls

The facility currently meets most of the source control requirements specified in Chapter 4 of the SWMM. Two exceptions are the solid waste storage area across from the titanium tent area and the bulk storage area in the NW 25th Avenue alley. Section 4.5 of the SWMM requires covers, pavement, and hydraulic isolation of stormwater as source control measures for solid waste storage areas. Section 4.10 of the SWMM also requires covers, pavement, and hydraulic isolation of stormwater for exterior storage of bulk materials.

The solid waste storage area is used for primarily for the temporary storage of non-putrescible wastes such as cardboard, pallets, and other packaging materials prior to off-site recycling or disposal. The solid waste storage area is paved with asphalt but is not currently covered. Stormwater draining from the storage area is currently captured in catch basin CB-4 and routed through the oil/water separator prior to discharge to the CSO.

The bulk storage area is used for storage of metals prior to sorting. This area is paved with asphalt and drains to catch basin CB-5. This area is currently not covered.

Calbag plans to install cover systems in both of these areas as part of the proposed remedial action for the site under oversight of the DEQ VCP as described in Section 2.3. With the completion of the proposed stormwater upgrades, all of the stormwater draining from these areas will be collected and treated in the StormwateRx treatment system prior to discharge to the CSO. Because of all of these planned measures, it is anticipated that the facility will meet all of the source control requirements of the SWMM. Therefore, no special circumstance review for source control measure is requested at this time.

7.0 LIMITATIONS

Work for this project was performed, and this report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Calbag Metals for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

8.0 REFERENCES

City of Portland, 2008. Stormwater Management Manual, Revision 4; August 1, 2008.

City of Portland, 2007. Sewer and Drainage Facilities Design Manual; Revised June 2007.

GeoPro Geologic Services, 2011. Focused Feasibility Study, Calbag Metals Co. Facility, 2495 NW Nicolai Street, Portland, Oregon; April 2011.

Hart Crowser, Inc., 2011. Operation and Maintenance Plan, Calbag Metals Company, Portland, Oregon, August 9, 2011.

Taylor Associates, Inc., 2008. Boatyard Stormwater Treatment Technology Study. Prepared for the Northwest Marine Trade Association, Washington State Department of Ecology, and Puget Soundkeeper Alliance; March 2008.

Washington Department of Ecology, 2010. Economic Impact Analysis, AKART Analysis, Draft National Pollution Discharge Elimination System (NPDES) Wastewater Discharge General Permit for Boatyards; Publication No. 10-10-018; April 2010.

Table 1 - Industrial Stormwater General Permit 1200-Z DMR Data Summary
Calbag Metals
Portland, Oregon

Sample Location	Sample Date	Total Copper (mg/l)	Total Lead (mg/l)	Total Zinc (mg/l)	pH S.U.	Total Suspended Solids (mg/l)	Total Oil & Grease (mg/l)	E. coli (counts/100ml)
Analytical Methods		200.8	200.8	200.8	E150.1	E160.2	E1664	SM9221F
MDL in mg/l		0.000036	0.000035	0.000193		1.1	0.507	0
Outfall	12/2/2008	0.0225	0.00688	0.0262	7.63	3.52	ND (<0.388)	N/A
Outfall	12/18/2008	0.0366	0.0275	0.0246	8.56	4.00	ND (<0.388)	N/A
Outfall	2/6/2009	0.0315	0.0143	0.0649	7.66	10.00	3.53	N/A
Outfall	3/16/2009	0.0108	0.00777	0.0246	7.47	10.00	ND (<0.388)	N/A
Geometric Mean for 2008 - 2009 Reporting Period		**0.023**	**0.012**	**0.032**	**7.819**	**6.13**	**3.53**	
Outfall	10/21/2009	0.0364	0.0223	0.0292	6.81	ND (<10.00)	ND (<4.85)	N/A
Outfall	11/13/2009	0.0425	0.0323	0.0288	7.11	ND (<10.00)	ND (<4.85)	N/A
Outfall	3/11/2010	0.0156	0.00819	0.0156	6.74	ND (<10.00)	ND (<4.85)	N/A
Outfall	3/29/2010	0.0272	0.0181	0.024	6.67	ND (<10.00)	ND (<4.81)	N/A
Geometric Mean for 2009 - 2010 Reporting Period		**0.028**	**0.018**	**0.024**	**6.8**	**ND**	**ND**	
Outfall	10/25/2010	0.0113	0.0115	0.0206	6.59	ND (<10.00)	ND (<4.85)	N/A
Outfall	11/30/2010	0.026	0.0176	0.0316	6.36	ND (<10.00)	ND (<4.85)	N/A
Outfall	2/15/2011	0.0283	0.0191	0.0284	6.51	ND (<10.00)	ND (<4.85)	N/A
Outfall	3/14/2011	0.0106	0.00656	0.0375	6.38	ND (<10.00)	4.85	N/A
Geometric Mean for 2010 - 2011 Reporting Period		**0.017**	**0.013**	**0.029**	**6.5**	**ND**	**4.85**	
Current 1200-Z Permit Benchmarks		*0.1*	*0.4*	*0.6*	*5.5 - 9.0*	*130*	*10*	*406*
New 1200-Z Permit Benchmarks (effective 7/1/12)		*0.020*	*0.035*	*0.09*	*5.5 - 9.0*	*100*	*10*	*406*

Notes:
DMR = Discharge Monitoring Report (required by permit).
Analytical methods per 40 CFR Part 136.
MDL = method detection limit.
ND = not detected.
N/A = not applicable.

Table 2 - Clara® Plug Flow Separator Performance Data Summary
Calbag Metals
Portland, Oregon

Constituents	Median Influent Concentration	Median Effluent Concentration	Median Removal Efficiency
Total Suspended Solids (mg/L)	285	174	47%
Copper, total (mg/L)	0.516	0.078	30%
Lead, total (mg/L)	0.088	0.072	26%
Zinc, total (mg/L)	2.82	1.21	32%
Aluminum, total (mg/L)	3.6	2.7	12%
Iron, total (mg/L)	5.6	4.3	20%

Notes:
All data provided by StormwateRx.

Table 3 - Aquip® Model 80SBE Treatment System Specifications
Calbag Metals
Portland, Oregon

Aquip Model 80SBE Specifications								
Pretreatment Chamber			Filtration Chamber					
Buffering Media			Inert Media			Sorptive Media		
Surface Area (sf)	Quantity (cf)	Depth (in)	Surface Area (sf)	Quantity (cf)	Depth (in)	Surface Area (sf)	Quantity (cf)	Depth (in)
9	2.3	3	80	60	9	80	80	12

Notes:
sf = square feet.
cf = cubic feet.
in = inches.

Table 4 - Aquip® Treatment System Performance Estimator
Calbag Metals
Portland, Oregon

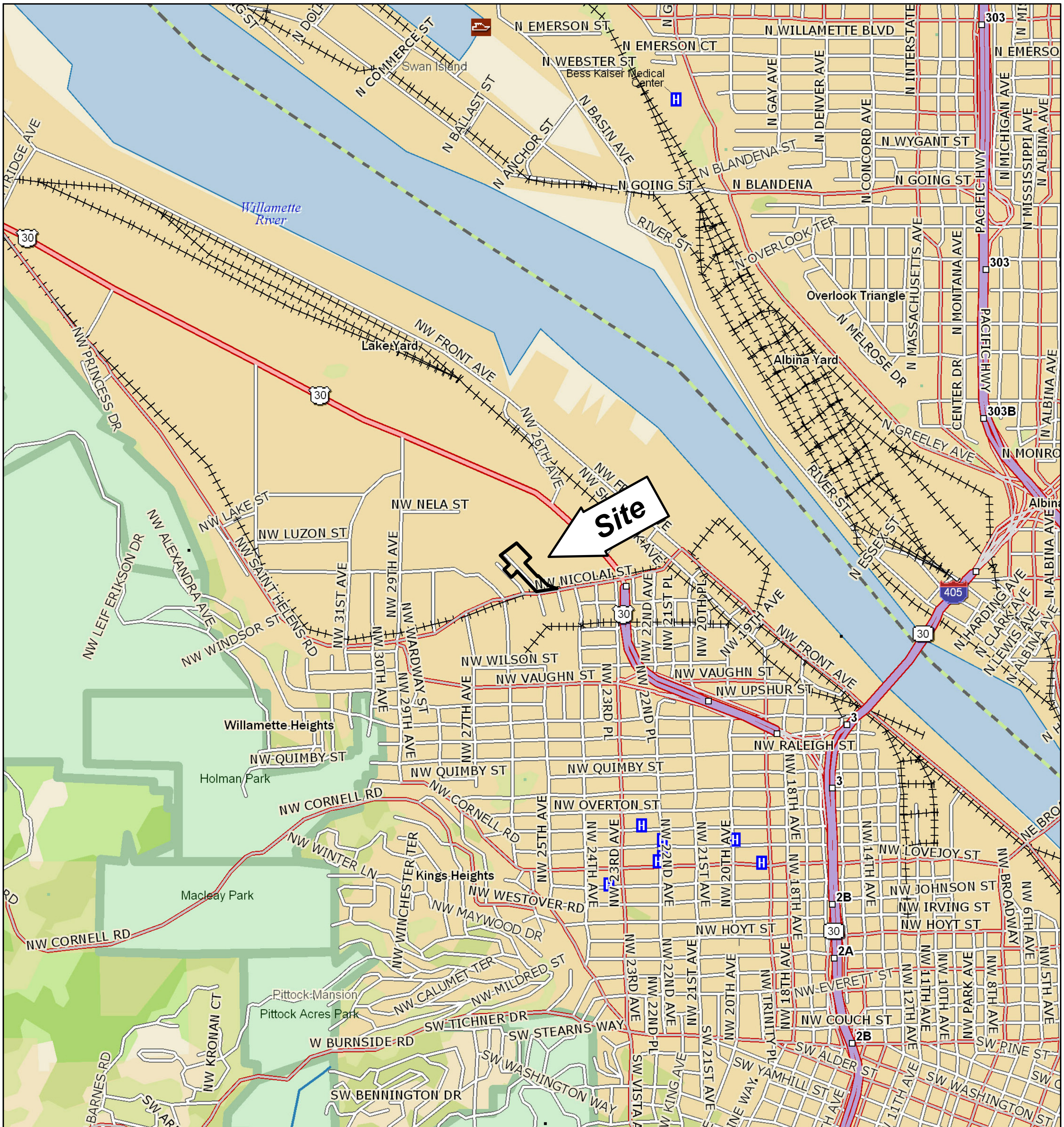
Constituents	Number of Facilities	Average Influent Concentrations, mg/L (Range) Number of Samples	Average Effluent Concentrations, mg/L (Range) Number of Samples	Average Removal Efficiency (Range) Number of Samples
Suspended Solids, total (influent 50 - 250 mg/L)	4	140 (66 - 220) n = 5	24 (2.0 - 73) n = 5	84% (67 - 97) n = 5
Copper, total (influent 0.014 - 0.50 mg/L)	9	0.19 (0.015 - 0.49) n = 14	0.020 (0.003 - 0.077) n = 14	84% (60 - 98) n = 14
Copper, total (influent 0.50 - 3.0 mg/L)	7	1.2 (0.66 - 2.7) n = 14	0.073 (0.006 - 0.34) n = 14	94% (75 - 99) n = 14
Copper, dissolved	13	0.087 (0.007 - 0.20) n = 6	0.014 (0.001 - 0.044) n = 6	77% (23 - 97%) n = 6
Oil & Grease	3	21 (5.3 - 54) n = 5	2.4 (2 - 2.5) n = 5	77% (55 - 96) n = 5

Notes:
Average influent and effluent concentrations are based on available monitoring data of the Aquip filtration system. Influent concentration data range used to calculate average was selected based on similarity to the site specific monitoring data.
All data provided by StormwateRx.

Table 5 - Aquip® Treatment System Influent and Effluent PCB and PAH Data Summary
Calbag Metals
Portland, Oregon

Analytes	Analytical Methods	Analytical Results (µg/l) Influent Concentrations	MRLs	Effluent Concentrations	MRLs
Polychlorinated Biphenyls (PCBs)	EPA Method 8082				
Aroclor 1016		ND	0.485	ND	0.481
Aroclor 1221		ND	0.971	ND	0.962
Aroclor 1232		ND	0.485	ND	0.481
Aroclor 1242		ND	0.485	ND	0.481
Aroclor 1248		ND	0.485	ND	0.481
Aroclor 1254		ND	0.485	ND	0.481
Aroclor 1260		ND	0.485	ND	0.481
Polynuclear Aromatic Hydrocarbons (PAH)	EPA 8270-SIM				
Acenaphthene		ND	0.0952	ND	0.0952
Acenaphthylene		ND	0.0952	ND	0.0952
Anthracene		ND	0.0952	ND	0.0952
Benzo(a) anthracene		ND	0.0952	ND	0.0952
Benzo(a) pyrene		ND	0.0952	ND	0.0952
Benzo(b) fluoranthene		ND	0.0952	ND	0.0952
Benzo(ghi) perylene		ND	0.0952	ND	0.0952
Benzo(k) fluoranthene		ND	0.0952	ND	0.0952
Chrysene		ND	0.0952	ND	0.0952
Dibenzo(a,h) anthracene		ND	0.190	ND	0.190
Fluoranthene		ND	0.0952	ND	0.0952
Indeno(1,2,3-cd) pyrene		ND	0.0952	ND	0.0952
Naphthalene		ND	0.0952	ND	0.0952
Phenanthrene		0.101	0.0952	ND	0.0952
Pyrene		ND	0.0952	ND	0.0952

Notes:
Samples collected on May 11, 2011.
µg/l = micrograms per liter.
MRLs = Method Reporting Limits.
ND = Non Detect.



0 2,000 4,000

Scale in Feet

N

Calbag Metals

2495 NW Nicolai Street, Portland, Oregon

Site Location Map

15720-01

9/11

HARTCROWSER

Figure

1

Source: DeLorme Topo USA®.

JAB 09/21/11 F:\DataJobs\15720-01 GeoPro Calbag\Permit Application Package\Stormwater Management Report\Figures - Stormwater\1572001-001 (Site Location-SW).dwg

JAB 09/21/11 F:\Data\Jobs\15720-01 GeoPro Calbag\Permit Application Package\Stormwater Management Report\Figures - Stormwater\1572001-002 (Drainage Basins-SW).dwg

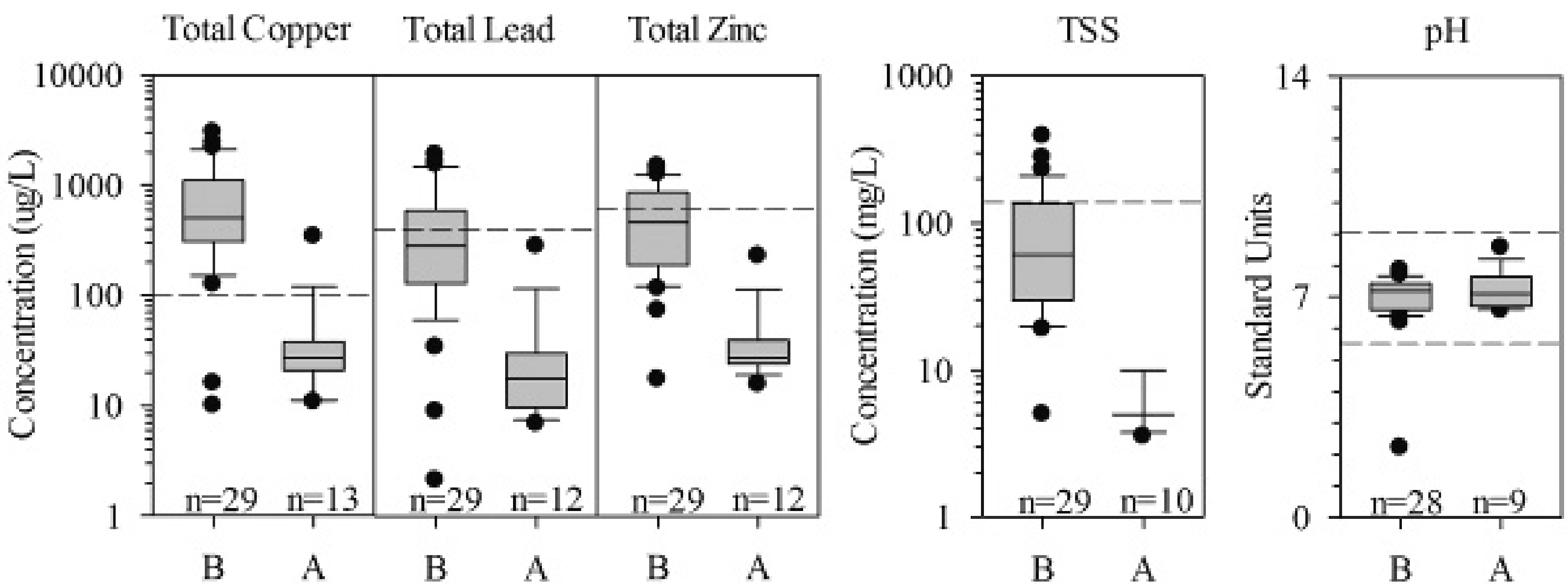
Calbag Metals
2495 NW Nicolai Street, Portland, Oregon

Site Plan and Drainage Basins

15720-01 9/11

HARTCROWSER

Figure 2



Note: Stormwater quality before (B) and after (A) installation of a StormwateRx treatment system in December 2008, consisting of a Clara® plug flow separator and Aquip® enhanced media filtration unit.

Calbag Metals
2495 NW Nicolai Street, Portland, Oregon

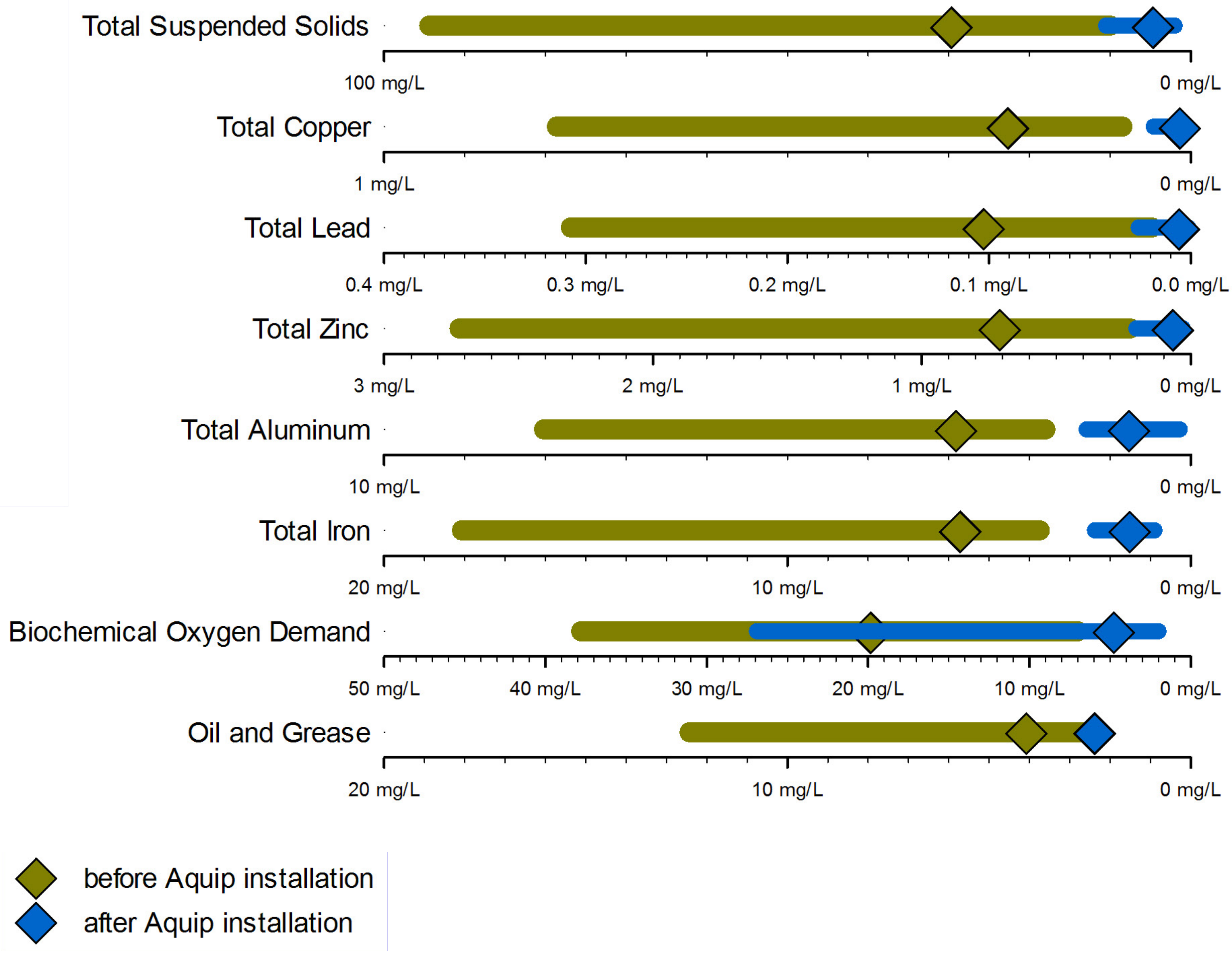
Box and Whisker Plot of Calbag's Stormwater Effluent Discharge Concentrations

15720-01

9/11

HARTCROWSER

Figure
3



Note: Based on representative data of over 450 discharge samples and influent/effluent pairs collected from Aquip® systems at industrial sites

HARTCROWSER

15720-01 9/11

Aquip® System Performance Summary

Calbag Metals
2495 NW Nicolai Street, Portland, Oregon

Figure
4

Appendix M
Beneficial Water Use Determination Report
2495 NW Nicolai Street, January 2013

BENEFICIAL WATER USE DETERMINATION

CALBAG METALS COMPANY SITE

ECSI No: 5059

Prepared for

CALBAG METALS COMPANY

2495 NW Nicolai Street
Portland, Oregon

Prepared by

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January 2013

Table of Contents

FIGURES

APPENDICES

1 INTRODUCTION

1.1 Scope

The purpose of this Beneficial Water Use Determination (BWUD) report is to outline the current and reasonably likely future beneficial uses of groundwater and surface water at the Site which consists of 1.68 acres of developed land and 0.23 acres of undeveloped land located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1). The developed portion of the site is paved and contains several buildings including a corporate office building, a general storage building, an open shed with a flat metal roof, and a processing warehouse. The warehouse is a flat-roofed wood and steel-framed building with concrete exterior walls and a concrete foundation that covers 67,281 square feet. The developed portion of the Site is entirely paved. The site is accessed from the south via an entrance from NW Nicolai Street and from the west via an entrance from NW 25th Place.

1.2 Previous Work

Several phases of investigation have been conducted including onsite catch basin sediment sampling (May 2009), cleaning onsite catch basins (July 2009), roof sediment sampling for PCBs (July 2009), asphalt and soil sampling for PCBs (October 2009), and concrete and asphalt sampling for PCBs (December 2009). A report titled "Environmental Site Assessment" (May 2009) summarized soil and groundwater sampling. Per the request of the Oregon Department of Environmental Quality (DEQ), an additional groundwater sampling round in March 2010 at 2495 NW Nicolai Street, as well as, groundwater sampling results from an adjacent property at 2500 NW Nicolai Street are included in this report.

2 HYDROGEOLOGIC SITE CHARACTERIZATION

2.1 Locality of the Facility

The locality of the facility (LOF) is defined as any point where a human or an ecological receptor contacts or is reasonably likely to come into contact with facility-related hazardous substances. The LOF must take into account the likelihood of the contamination migrating over time, and is thus usually larger than the facility.

The Site is operated by Calbag Metals Company ("Calbag"). Calbag operates a nonferrous scrap metal recycling business at the Site which purchases used and scrap metals, then cuts, sorts, and packages the metals for resale. The purchased metals generally consist of aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items that may contain contaminants such as mercury or PCBs. Fabrication does not occur at the Site.

The primary outdoor activity at the Site is delivery of scrap metals by truck or customer private vehicles, and unloading and loading of the scrap metal. Most of the scrap metal is located inside the onsite warehouse building. Outdoor storage is generally limited to full and empty hoppers, uncovered storage piles separated by concrete block walls, empty steel drop-boxes, some baled metals, and trucks.

Best management practices at the Site include sweeping and catch basin cleanout. The asphalt pavement is swept daily with a power sweeper if weather conditions permit. Loading docks are swept manually every day. Catch basins are regularly inspected and cleaned quarterly.

Warehouses and a parking lot cover the area north of the Site and is part of the Guilds Lake Remediation Project. This property was the location of the Guilds Lake incinerator and landfill and is owned and managed by the City of Portland. The area has been remediated of previous known hazardous substances including petroleum, chromium, lead, arsenic and cadmium. The Oregon Department of Environmental Quality ("DEQ") approved a no further remediation action in 1998, although long term methane and groundwater monitoring is ongoing.

Stormwater at the Site is collected and treated by a water treatment system and either discharged to the City of Portland combined sewer outfall or to the City of Portland Sanitary Sewer (see Section 2.4.3). Groundwater beneath the Site has been investigated and shown to not be impacted by Site operations (see Section 2.4.1). Therefore, the Locality of the Facility is identified as the property and soil beneath the property. The property boundary, also the approximate Locality of the Facility, is shown in yellow on the site map of Figure 1.

There are no current or foreseeable future uses of groundwater at the Site. All water used at the Site is supplied by the City of Portland.

2.2 Conceptual Site Model

The conceptual site model depicts the sources of contamination, contaminant release and transport mechanisms, exposure media, and exposure routes to particular types of receptors.

The chemicals of interest (COIs) have been identified as metals (chromium, arsenic, lead, cadmium), PCBs, phthalates, and petroleum products such as oil and grease. These constituents were introduced onto the site likely as a result of debris accumulation from the movement and handling of scrap metal through site related operations.

There are no complete pathways at the Site from soil or surface water to ecological receptors, or from soil to groundwater for human receptors. No surface water is present onsite. Potentially contaminated surface water is collected directed into two on-site treatment systems then discharged into the City of Portland's stormwater combined sewer outfall. The site is an active industrial facility with frequent heavy equipment movement in the open paved areas, therefore there is no soil exposed for contact with ecological receptors.

Groundwater may potentially be contaminated through leaching of contaminants in soil, however the site is completely covered with asphalt, concrete, and buildings and no soil is exposed. The Site does not contain dry wells and all stormwater is collected, treated and discharged offsite. The depth to groundwateris over 40 feet below ground surface, which is deeper than the typical 15 foot depth for shallow excavation activity. Therefore, the leaching pathway from subsurface soil to groundwater is likely incomplete.

Groundwater beneath the Site flows northward and discharges to the Willamette River at some point northeast of the Site.

2.3 Regional Hydrogeology

The Site is located within the Portland Basin and is underlain at depth by Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods. More recent Quaternary alluvium deposited by the Willamette River, consisting of silt, sand and organic-rich clay, overlies the Pleistocene sediments and separates the geologic materials underlying the Site from the Willamette River. Man-made fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill-ends were deposited on an original ground surface to the north of the Site at the Guilds Lake Remediation Project. The topography of the Site is relatively flat. The nearest surface water to the Site is the Willamette River, located approximately ½ mile to the northeast.

2.4 Hydrogeology of the Locality of the Facility

No surface water body is present on the site. Groundwater beneath the Site is unconfined with static water levels approximately 45 to 50 feet below ground surface. Stormwater runoff is captured and treated by the onsite stormwater collection systems prior to discharge under a National Pollutant Discharge Elimination System (NPDES) permit to the City combined stormwater system in NW 25th Place. A small portion of untreated stormwater from a catch basin within leased property is discharged westerly to the City combined stormwater system in NW 25th Place, and from a catch basin in the south part of the Site to NW Nicolai Street which is discharged into the City sanitary sewer system. No public supply wells or water wells were located during the July 2008 Response to EPA CERCLA Section 104(e) Information Request ("Phase I Investigation") (see Appendix D).

The groundwater flow direction is generally northerly toward the Willamette River. The groundwater flow direction may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence.

2.4.1 Groundwater Investigation

A groundwater investigation was conducted on a voluntary basis with the intent to carry out an upland source control evaluation. Results of the investigation were documented in the report "Environmental Site Assessment" dated May 2009 and the report was submitted to DEQ. Three groundwater monitoring wells MW-1, MW-2 and MW-3 were installed at the Site in October and November 2008 (see

Figure 1). The Oregon Water Resources Department logs are included in Appendix C. The wells were sampled initially in November 2008 and the data included in the May 2009 report. A second round of groundwater sampling in March 2010 is summarized in a monitoring report included herein as Appendix A. The following discussion summarizes groundwater sample data from the 2008 and 2010 groundwater sampling events with respect to evaluation of beneficial use of groundwater. The data is compared to both DEQ tapwater risk-based concentrations (RBCs) as well as DEQ Joint Source Control Screening Level Values for aquatic receptors.

In general, total and dissolved metals were not detected in groundwater samples from the three onsite monitor wells. The Practical Quantitation Limits (PQLs) for beryllium, cadmium, copper, selenium and silver were higher than their SLVs. Only the PQL for arsenic exceeds its RBC.

PCBs as arochlors were not detected, although their PQLs were higher than their respective RBCs, and the PQL for arochlor 1254 is higher than its SLV.

Organochlorine pesticides were not detected, although some pesticides had PQLs that are higher than their respective RBCs (including aldrin and dieldrin), and higher than their respective SLVs (including heptachlor epoxide, gamma chlordane, alpha chlordane, DDD and DDT). There is no known use of organochlorine pesticides onsite.

Four VOCs, including carbon tetrachloride, 1,1,1-trichloroethane, carbon disulfide, and tetrachloroethene (PCE), were detected in groundwater at very low concentrations that did not exceed their DEQ RBCs or SLVs. PCE and carbon tetrachloride are not chemicals known to have been used on the Site. PCE was detected in upgradient offsite wells MW-4 and MW-6 as previously reported in the May 2009 report. Carbon tetrachloride may be a laboratory contaminant.

Chloroform was the only VOC that was detected during the November 2008 and March 2010 sampling events at concentrations that exceed its RBC. Concentrations of chloroform detected in well MW-1 range from 1.2 to 1.3 ug/l, and in MW-2 from 0.44 to 0.81 ug/l. Chloroform is not known to have been used on the Site but it is a common byproduct of treatment of drinking water. All other VOCs were not detected in groundwater samples, although six VOCs had PQLs that exceeded their RBCs including 1,2 dibromoethane, 1,2 dichloroethane, bromodichloromethane, naphthalene and vinyl chloride, and chloroform in well MW-2.

PAHs were not detected in Site groundwater at concentrations that exceeded DEQ RBCs or SLVs. Two PAHs had PQLs that exceed their respective RBCs including benzo(a)pyrene and dibenz(a,h)anthracene.

Petroleum hydrocarbons were not detected although the PQL for diesel exceeds its RBC. Petroleum hydrocarbon constituents would also be detected through VOC analyses.

In summary, chloroform was the only chemical detected in groundwater above screening criteria. Chloroform was not known to be used onsite and is a common byproduct in treatment of drinking water.

2.4.2 Upgradient Groundwater

Upgradient monitor well MW-4 was installed in November 2008 and offsite monitor wells MW-5 and MW-6 were installed in January 2009 on property located at 2500 NW Nicolai Street. A report titled "Independent Cleanup Pathway Final Report", dated November 2010 includes the results of sampling groundwater and soil at 2500 NW Nicolai Street. A report on monitoring the groundwater, titled "Groundwater Monitoring Report" dated May 2010 summarizes the groundwater investigation at the Site and is included in Appendix B. A No Further Action determination was made by DEQ for the 2500 NW Nicolai Street property on August 25, 2011.

2.4.3 Stormwater Management System

Site stormwater is managed through a series of catch basins and water treatment systems. The drainage areas are relatively flat, indistinct drainage divides identified as 'North', 'East', 'Central', 'West', and 'Northwest' Drainage Basins in the Stormwater Management Report submitted to the City of Portland Bureau of Environmental Services (BES) in 2012 as part of the permit application to upgrade the stormwater treatment systems at the Site (see Figure 2). The surface drainages at the Site have been similarly labeled 'Drainage Area I' through 'Drainage Area V' in the Calbag Metals Company NPDES Stormwater Pollution Control Plan as shown in Figure 2.

Site stormwater is discharged westerly from a stormwater treatment system to the City CSO within NW 25th Place. Site stormwater is discharged southerly from a catch basin to the City sanitary sewer line in NW Nicolai Street. Site discharges to City pipelines are permitted through the City.

The west drainage basin includes the northwest portion of the warehouse building roof, the NW 25th Avenue alley, and the paved materials handling area on the west end of the warehouse facility. Stormwater in the west basin drains to one of three catch basins, CB-3, CB-4, and CB-5. Stormwater that collects in CB-3, CB-4, and CB-5 discharges by gravity flow to the City's combined sanitary/stormwater sewer overflow (CSO) system. Stormwater in CB-4 and CB-5 is routed through an above-ground treatment system before being discharged to the CSO along NW 25th Place. CB-3 also discharges to the CSO along NW 25th Place, but without any pretreatment.

The east basin includes the northeast, southeast, and southwest portions of the warehouse building roof, and the paved parking and truck unloading/loading area to the east of the warehouse. Stormwater in the east basin drains to catch basin CB-6 and CB-7 or sheet flows to NW Nicolai Street. Stormwater collecting in CB-6 discharges to a sanitary sewer along NW Nicolai Street without any pretreatment.

3 POTENTIAL BENEFICIAL USES OF WATER

The site is zoned heavy industrial (IH) and is expected to remain as heavy industrial into the foreseeable future. The site is located in an area of northwest Portland surrounded by heavy industry as past and current land use. This area is also within the Guild's Lake Industrial Sanctuary Plan District, formalized through adoption of Ordinance No. 176092 by the Portland City Council on December 21, 2001. An industrial sanctuary preserves land for long-term industrial use.

Groundwater from beneath the Site flows northward toward the Willamette River and likely discharges to the river at some distance downgradient from the Site.

There are no potable water wells or surface water bodies on the Site.

The beneficial uses of water in the general region of the Site are limited to industrial ground water wells and recharge to the Willamette River. No residential, industrial, or public water supply wells are located within ¼ mile from the site (see Appendix D), and the Willamette River is located about 2000 feet northeast from the Site. There is no current or planned future use of groundwater onsite as all water is provided by the city of Portland.

3.1 Current and Likely Future Beneficial Uses

No current or likely future beneficial use of groundwater at the Site has been identified except for recharge to the Willamette River. The facility uses City of Portland water for all its onsite water use. Stormwater is collected, treated and discharged to City of Portland sewer system.

4 EVALUATION OF BENEFICIAL USES OF WATER

The only onsite identified potential beneficial use of groundwater in the Locality of the Facility is discharge to surface water in the Willamette River. The only identified current beneficial uses of groundwater in the heavy industrial area surrounding the Site are industrial and potentially discharge to the Willamette River. Potable water is provided onsite and in offsite areas by the City of Portland so it is not likely that groundwater will be used as a source for residential or occupational drinking water.

The groundwater investigation determined that groundwater beneath the Site has not been impacted by Site activities. Chloroform is the only chemical detected at low concentrations in groundwater beneath the Site and it is not known to have been used onsite and it is also a known byproduct of treatment of drinking water so could be from offsite sources. The low concentrations of chloroform in groundwater beneath the Site could potentially migrate northward to be discharged to the Willamette River, but would undergo attenuation along the migration pathway to the River. Attenuation would include potential dilution or mingling with cleaner groundwater downgradient from the site, and degradation and retardation through contact with soil and organic particles along the migration pathway to the river. It is unlikely that the low concentrations detected beneath the Site would be discharged at the Willamette River at concentrations that would exceed aquatic SLVs.

5 REFERENCES

Calbag Metals Co., Responses to U.S. EPA CERCLA Section 104(e) Information Request, Calbag Metals I, 2495 NW Nicolai St., Portland, Oregon, July 2008.

GeoPro Geologic Services LLC co-author, Environmental Site Assessment Subsurface, Calbag Facility, 2495 NW Nicolai Street, Portland, Oregon, May 2009.

GeoPro LLC, Groundwater Monitoring Report, Calbag Metals Company Facility, 2495 NW Nicolai Street, Portland, Oregon, May 2010.

GeoPro LLC, Focused Feasibility Study, Calbag Metals Co. Facility, 2495 NW Nicolai Street, Portland, Oregon, April 2011.

HartCrowser, Stormwater Management Report, for Calbag Metals Company, 2495 NW Nicolai Street, Portland, Oregon, March 15, 2012.

Technical Assessment Services, Inc., Ecological Level I Scoping Report, Calbag Metals Company Facility, November 2012.

6 LIMITATIONS

This report has been prepared for use by the landowner and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the landowner should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

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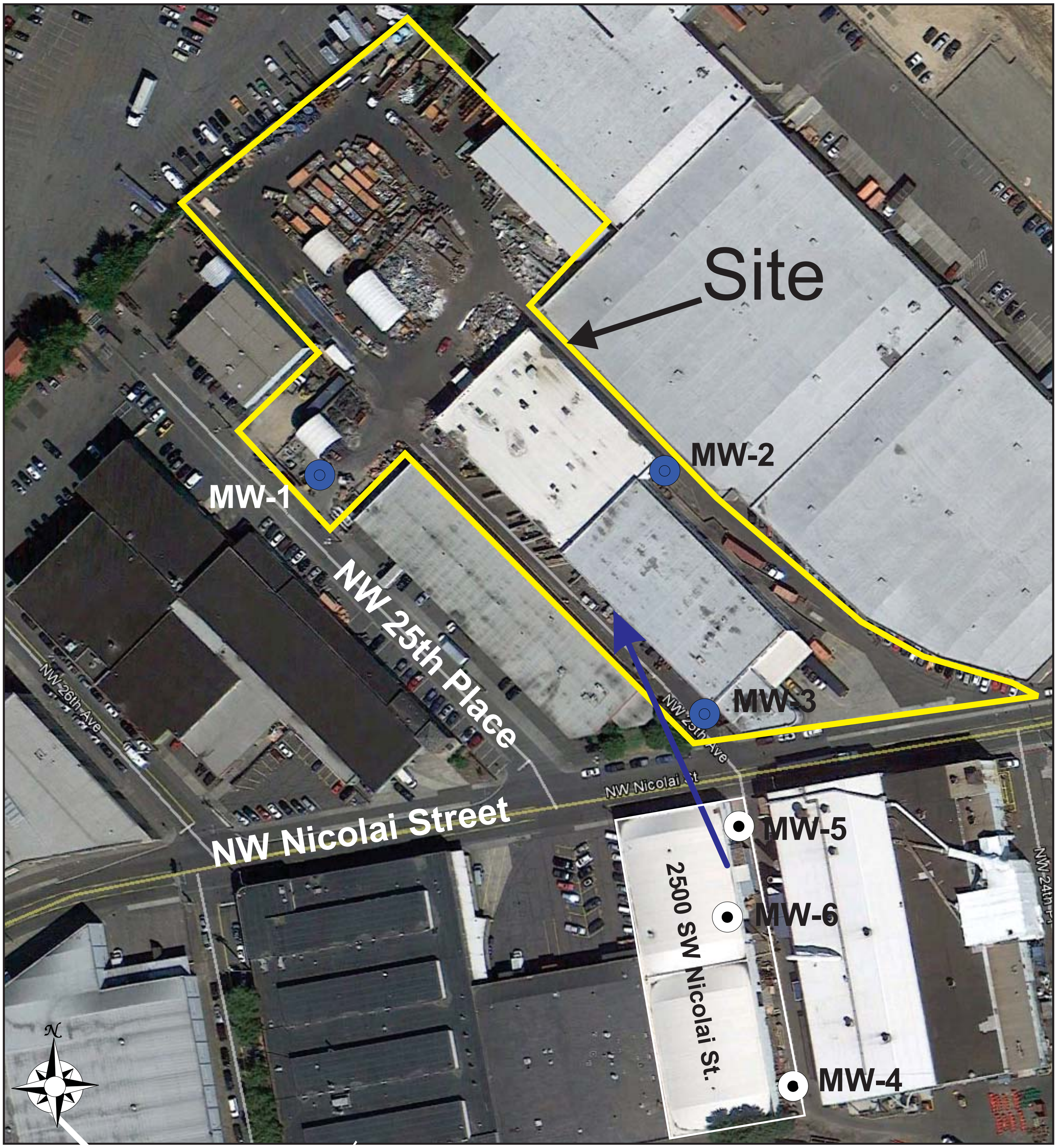
Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understand that failure to sample soil or water, or install groundwater monitor wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not been discovered at the time of this report or in the future. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until GeoPro LLC is given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

Respectfully submitted,

Richard C. Kent, R.G.



Groundwater Monitor Wells

Upgradient Groundwater Monitor Wells

Groundwater Gradient Direction

Figure 1
GROUNDWATER MONITORING WELLS LOCATIONS AND GRADIENT DIRECTION MAP

Calbag Metals Company
2495 NW Nicolai Street
Portland, Oregon

January 2013

GeoPro LLC
PO Box 26
Battle Ground, WA 98604
(360) 666-1465

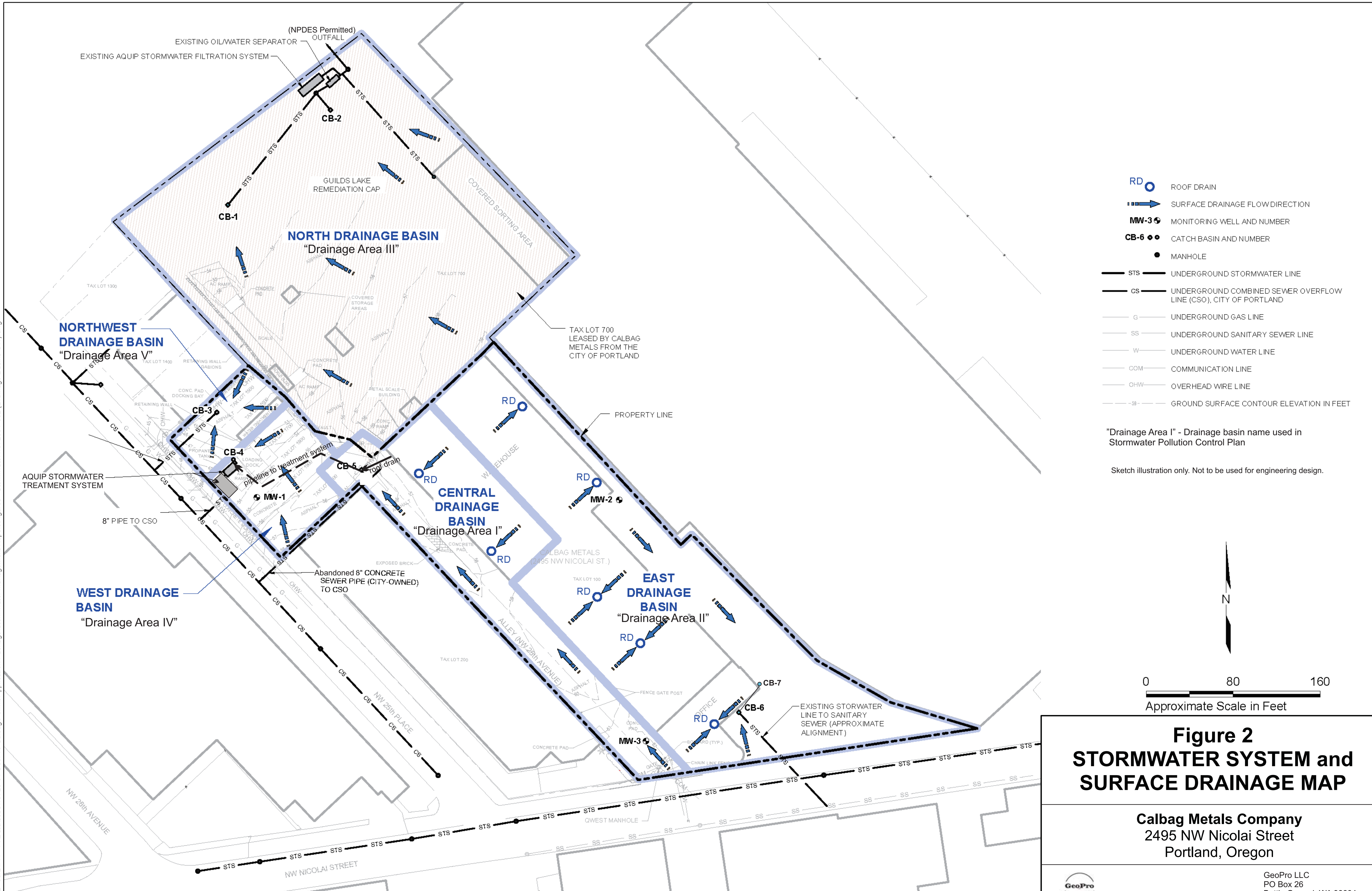


Figure 2
STORMWATER SYSTEM and SURFACE DRAINAGE MAP

Calbag Metals Company
2495 NW Nicolai Street
Portland, Oregon

January 2013

GeoPro LLC
PO Box 26
Battle Ground, WA 98604
(360) 666-1465

Base map source: Hartcrowser, Figure 2-Site Plan and Drainage Basins, Stormwater Management Report for Calbag Metals Company, March 15, 2012

Beneficial Water Use Determination

APPENDICES

Appendix A
Groundwater Monitoring Report
2495 NW Nicolai Street, Portland, Oregon

GROUNDWATER MONITORING REPORT

CALBAG METALS COMPANY FACILITY
2495 NW NICOLAI STREET
PORTLAND, OREGON

ECSI No. 5059

Prepared for

Calbag Metals Company

2495 NW Nicolai Street
Portland, Oregon

Prepared by

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PO Box 26, Battle Ground, Washington 98604
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May 2010

Contents

1 INTRODUCTION

1.1 Purpose

This Report is prepared for property located at 2495 NW Nicolai Street, Portland, Oregon (Site) operated by Calbag Metals Company. This Groundwater Monitoring Report is in partial response to an Oregon Department of Environmental Quality (DEQ) Voluntary Cleanup Program (VCP) Agreement.

DEQ reviewed a Site subsurface investigation report, "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009, and provided comments in a letter dated October 28, 2009 that included the need to conduct an additional round of groundwater sampling during February or March 2010. The purpose of this groundwater monitoring report is to summarize all Site groundwater monitoring data and to evaluate the nature and extent of potential contamination in shallow groundwater. Groundwater monitoring is carried out to support a potential No Further Action (NFA) determination for the Site.

1.2 Scope of Services

This work is performed to determine whether contaminants, primarily metals, have impacted shallow groundwater beneath the Site. The following are specific objectives:

1. Conduct a second round of groundwater monitoring to include water level measurement and groundwater sampling, for three onsite monitor wells.
2. Determine shallow groundwater gradient beneath the Site for the March 2010 monitoring event.
3. Evaluate the nature and extent of contamination in shallow groundwater.

2 BACKGROUND

2.1 Site Description

The Site consists of 1.68 acres of developed land and 0.23 acres of undeveloped land located at 2495 NW Nicolai Street, Portland, Oregon (see Figure 1). The developed portion of the site is paved and contains several buildings including a corporate office building, a general storage building, an open shed with a flat metal roof, and a processing warehouse. The warehouse is a flat-roofed wood and steel-framed building with concrete exterior walls and a concrete foundation that covers 67,281 square feet. The site is accessed from the south via an entrance from NW Nicolai Street and from the west via an entrance from NW 25th Place

The Site is operated by Calbag Metals Company ("Calbag"). Calbag purchases used and scrap nonferrous metal, then cuts, sorts, and packages the metals for resale. The purchased metals include primarily aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or polychlorinated biphenyls (PCBs). Fabrication does not occur at the Site.

2.2 Physical Setting

The ground surface at the site slopes gradually to the northeast. Ground cover consists primarily of a building and asphalt parking. The Site is zoned industrial. The Site is located within Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). Quaternary alluvium deposits of river deposits of silt, sand and organic-rich clay separate the Site from the Willamette River. The geologic map depicts Holocene artificial fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill ends that were deposited to the north of the Site.

2.3 Previous Assessments

In response to a US Environmental Protection Agency (EPA) CERCLA Section 104(e) information request, Site information was summarized in "Responses to U.S. EPA CERCLA Section 104(e) Information Request", dated July 2008, and was submitted to EPA.

A soil and groundwater investigation was conducted in October-November 2008, and included drilling and sampling three soil borings and installation of three monitoring wells. An initial round of groundwater samples were collected from the monitoring wells. Results of the soil and groundwater investigation were summarized in "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009.

The findings summarized in the May 2009 report include a comparison of the groundwater sample results to the Screening Level Values (SLVs) for water from the DEQ JSCS Table 3-1. The results of sampling the groundwater from the three monitor wells indicates that chemicals are not present at elevated concentrations. Some detected practical quantitation limits (PQLs) exceeded SLVs and only chloroform, a common laboratory contaminant, was detected above SLVs.

3 INVESTIGATION ACTIVITIES

A second round of groundwater monitoring was conducted in March 2010 and included measurement of groundwater levels and sampling groundwater in three onsite monitor wells, MW-1, MW-2 and MW-3. Initial groundwater monitoring was conducted shortly after the monitor wells were installed in November 2008 and the results are report in the May 2009 site assessment report.

3.1 Groundwater Monitoring

Groundwater levels were measured in each monitoring well prior to sampling groundwater. At each well, the locking cap was removed and the conditions in the well were allowed to equilibrate to external conditions. General weather and well conditions, as well as monitoring data, were noted on monitoring logs (see Appendix B). To measure water levels, a water level probe was lowered into the well until the probe contacted the water surface in the well, signaled by a buzzer. The depth in feet to the water surface was measured from a surveyed measuring point on the rim of the well casing and the elevation of the water surface was calculated with respect to feet above sea level.

Once groundwater levels were measured, well purging and groundwater sampling in each monitor well was conducted using low-flow techniques. A pump and dedicated polyethylene tubing were lowered into the well casing and positioned toward the middle of the well screen. The low-flow pump was then turned on and the pump rate set low enough to minimize drawdown of the water level within the well during purging. The monitor wells were purged and groundwater quality parameters, including temperature, pH, and conductivity, were periodically monitored until they stabilized.

Turbidity was visually monitored and recorded, and was also used as an indication of when the groundwater was stable for sampling. After stabilization was reached, a groundwater sample was collected following the low-flow technique described above. Groundwater samples were prepared according to protocol established by the analytical laboratory. A chain of custody was prepared for all groundwater samples which were sent to the laboratory in cooled ice chests.

3.2 Chemical Analyses and Methods

Metals, petroleum hydrocarbons, and PAHs are the main chemicals of concern based on the operations of the facility. In addition, the Guilds Lake Remediation Project and other offsite properties in the vicinity of the Site previously detected hazardous substances including PCBs, petroleum hydrocarbons, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples from the Site were analyzed for at least constituents detected in the vicinity.

All groundwater samples were analyzed for petroleum hydrocarbons by NWTPH, volatile organics (VOCs) by EPA Method 8260B, PAHS by EPA Method 8270D/SIM, PCBs by EPA Method 8082, pesticides by EPA Method 8081A, total and dissolved Priority Pollutant Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by EPA Method 200.8/7470A, hexane extractable material ("HEM" – oil and grease) by EPA Method 1664, and total organic carbon (TOC). Dissolved metals were analyzed only for the initial November 2009 groundwater sampling round.

4 GROUNDWATER MONITORING RESULTS

Data quality objectives for this investigation are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in shallow groundwater above concentrations of concern. Groundwater sampling data were evaluated by comparing to appropriate screening criteria to support a potential NFA determination for the Site.

4.1 Groundwater Monitoring

Groundwater levels were measured in all wells during the round of groundwater monitoring on February 20, 2009, and again on March 22, 2010. Groundwater level measurements for both rounds of groundwater monitoring, as well as elevations and surveyed locations of the monitor wells are presented in Table 1.

Groundwater flow direction for the March 2010 monitoring event are shown on Figure 5. The shallow groundwater gradient beneath the Site is very low to flat. Based on measured water levels, shallow groundwater flows generally north-northwesterly and in the general downstream flow direction of the Willamette River. In this area of northwest Portland, shallow groundwater flow may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. Further investigation would be required to better define the groundwater flow directions and gradients with respect to the general region of the Site.

Table 1 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-1	56.010	55.841	691089.023	7637324.331	50	40/50	2/20/09	39.55	16.291
							3/22/10	41.66	14.181
MW-2	60.289	60.049	691054.877	7637663.578	49.5	39.5/49.5	2/20/09	43.69	16.359
							3/22/10	45.65	14.399
MW-3	62.943	62.567	690834.411	7637665.522	55	45/55	2/20/09	46.29	16.277
							3/22/10	48.23	14.337

Notes:

Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Wells installed October 31 – November 1, 2008.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008

4.2 Analytical Results

Results of November 2008 and March 2010 groundwater sample laboratory analyses are summarized in the following Table 2. The March 2010 laboratory report is included in Appendix A. Risk-based concentrations (RBCs) for ingestion and inhalation of tapwater and freshwater ecological screening levels (SLVs) are included in Table 2 for comparison to results of the 2008 and 2010 groundwater sampling results. Groundwater beneath the Site is not currently used for consumption, since drinking water is provided by the City of Portland Water Bureau, and no plans exist for future use of shallow groundwater. Groundwater flowing from beneath the Site flows toward the Willamette River and likely discharges to the river a distance of ½ mile or more downgradient from the Site. A potential beneficial use of groundwater may be discharge to surface water.

In general, total and dissolved metals were not detected in groundwater from the three monitor wells. However, the Practical Quantitation Limit (PQL) for some metals were higher than its RBC. The PQL for arsenic exceeds its RBC. The PQLs for beryllium, cadmium, copper, selenium and silver exceed their SLVs. The March 2010 samples were not analyzed for dissolved metals. Total metals concentrations may not be representative of dissolved conditions as they may also be measuring soil particles incorporated into samples.

PCBs as arochlors were not detected, although their PQLs were higher than their respective RBCs, and the PQL for arochlor 1254 is higher than its SLV.

Organochlorine pesticides were not detected, although some pesticides had PQLs that are higher than their respective RBCs, including aldrin and dieldrin, and higher than their respective SLVs, including heptachlor epoxide, gamma chlordane, alpha chlordane, DDD and DDT. There is no known use of organochlorine pesticides onsite.

Four VOCs, including carbon tetrachloride, 1,1,1-trichloroethane, carbon disulfide, and tetrachloroethene (PCE), were detected in groundwater at very low concentrations that did not exceed their DEQ RBCs or SLVs. PCE and carbon tetrachloride are not chemicals known to have been used on the Site. PCE was detected in upgradient wells MW-4 and MW-6 as previously reported. Carbon tetrachloride may be a laboratory contaminant. Chloroform was detected during the November 2008 and March 2010 sampling events at concentrations that exceed its RBC. Concentrations of chloroform detected in well MW-1 range from 1.2 to 1.3 ug/l and in MW-2 from

0.44 to 0.81 ug/l. Chloroform is not known to have been used on the Site and is a common byproduct of treatment of drinking water. All other VOCs were not detected but six VOCs had PQLs that exceeded their RBCs including 1,2 dibromoethane, 1,2 dichloroethane, bromodichloromethane, naphthalene and vinyl chloride, and chloroform in well MW-2.

PAHs were not detected in Site groundwater at concentrations exceeding DEQ RBCs or SLVs. Two PAHs had PQLs that exceed their respective RBCs including benzo(a)pyrene and dibenz(a,h)anthracene.

Petroleum hydrocarbons were not detected although the PQL for diesel exceeds its RBC. Petroleum hydrocarbon constituents would also be detected through VOC analyses.

Table 2 - Groundwater Analyses Monitor Wells

	DEQ SLV ug/l [1]	**DEQ RBC** ug/l [2]			**MW-1** (40-50) ug/l [3]		**MW-2** (39-49) ug/l		**MW-3** (45-55) ug/l	
CHEMICALS		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
METALS-TOTAL (EPA 200.8/7470A)										
Antimony	1600				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	0.038	0.13	0.27	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	73	150	290	<11	<11	<11	<11	<11	<11
Cadmium	2.2	18	37	73	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium	11	55,000	110,000	220,000	<11	<11	<11	<11	<11	<11
Copper	9	1500	2900	5800	<11	<11	<11	<11	<11	<11
Lead	2.5	15	15	15	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	11	22	44	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	730	1500	2900	<22	<22	<22	<22	<22	<22
Selenium	5				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12				<11	<11	<11	<11	<11	<11
Thallium	40				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120				<28	<56	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)										
Antimony	1600				<5		<5		<5	
Arsenic	150	0.038	0.13	0.27	<3		<3		<3	
Beryllium	5.3	73	150	290	<10		<10		<10	
Cadmium	2.2	18	37	73	<4		<4		<4	
Chromium	11	55,000	110,000	220,000	<10		<10		<10	
Copper	9	1500	2900	5800	<10		<10		<10	
Lead	2.5	15	15	15	<1		<1		<1	

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Mercury	0.77	11	22	44	<0.5		<0.5		<0.5	
Nickel	52	730	1500	2900	<20		<20		<20	
Selenium	5				<5		<5		<5	
Silver	0.12				<10		<10		<10	
Thallium	40				<5		<5		<5	
Zinc	120				<50		<50		<50	
PCBs AROCLORS (EPA 8082)										
Aroclor 1016		0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)										
alpha-BHC	2.2				<0.0047		<0.0047		<0.0047	
beta-BHC	2.2				<0.0047		<0.0047		<0.0047	
delta-BHC					<0.0047		<0.0047		<0.0047	
gamma-BHC (Lindane)	0.052	0.012	0.058	0.065	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	0.0029	0.014	0.016	<0.0047		<0.0047		<0.0047	
Aldrin	0.06	0.00077	0.0037	0.0041	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	0.0062	0.022	0.045	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
alpha-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	
4,4'-DDE		0.039	0.19	0.21	<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	0.24	0.82	1.7	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	0.17	0.58	1.2	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	0.00081	0.0039	0.0044	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endrin	0.036	11	22	44	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde					<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03				<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate					<0.0047		<0.0047		<0.0047	
Endrin Ketone					<0.019		<0.019		<0.019	
Toxaphene					<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)										
1,1,1,2-Tetrachloroethane	186				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	9,100	18,000	38,000	<0.2	<0.2	<0.2	<0.2	<0.2	**0.46**
1,1,2,2-Tetrachoroethane	2,200				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9,400	0.23	0.83	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	2.3	11	13	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	340	680	1,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	**DEQ SLV** ug/l [1]	**DEQ RBC** ug/l [2]			**MW-1** (40-50) ug/l [3]		**MW-2** (39-49) ug/l		**MW-3** (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
1,2,4-Trimethylbenzene		15	29	61	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane					<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (EDB)		0.0063	0.031	0.034	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	370	740	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane (EDC)	20,000	0.14	0.69	0.78	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5,700				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		360	730	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	0.42	2.3	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)					<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4,760				<1	<1	<1	<1	<1	<1
2-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99				<2	<2	<2	<2	<2	<2
4-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1,500				<5	<5	<5	<5	<5	<5
Benzene	130	0.39	1.7	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		0.12	0.59	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		2.7	12	16	<1	<1	<1	<1	<1	<1
Bromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92				<0.2	<0.2	<0.2	<0.2	<0.2	**0.28**
Carbon Tetrachloride	74	0.41	1.7	2.4	<0.2	<0.2	<0.2	<0.2	**0.35**	**0.31**
Chloroethane		21,000	42,000	88,000	<1	<1	<1	<1	<1	<1

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Chlorobenzene	50	91	180	380	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroform	1,240	0.19	0.98	0.99	**1.3**	**1.2**	<0.2	<0.2	**0.44**	**0.81**
Chloromethane		190	380	790	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	590	73	150	290	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	1.4	6.7	7.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene		0.0081	0.39	0.44						
Hexachlorobutadiene	9.3				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)					<1	<1	<1	<1	<1	<1
Isopropylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	200	410	850	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2,200				<1	<1	<1	<1	<1	<1
Methy t-Butyl Ether (MTBE)		12	53	67	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone					<2	<2	<2	<2	<2	<2
Naphthalene	620	0.14	0.78	0.72	<1	<1	<1	<1	<1	<1
n-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		680	1,400	2,800	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		200	410	850	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Isopropyltoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		1,600	3,200	6,700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Tetrachloroethene	840	11	49	64	**0.3**	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	9.8	2,300	4,600	9,200	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21,900	0.43	1.7	3.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane (Freon 11)		1,300	2,600	5,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16				<2	<2	<2	<2	<2	<2
Vinyl Chloride		0.025	0.059	0.52	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)										
Naphthalene	620	0.14	0.78	0.72	<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
2-Methylnaphthalene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
1-Methylnaphthalene	201				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenaphthylene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenapththene	520	2,200			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluorene	3.9	1,500			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Phenanthrene	6.3				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Anthracene	13				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluoranthene	6.16				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Pyrene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Benzo(a)anthracene	0.027	0.029	0.088	0.56	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Chrysene		0.16	0.66		<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(b)fluoranthene		0.011	0.039	0.16	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(k)fluoranthene		0.29			<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(a)pyrene	0.014	0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Ideno(1,2,3-c,d)pyrene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Dibenz(a,h)anthracene		0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(g,h,i)perylene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
PETROLEUM HYDROCARBONS										
Diesel Range (NWTPH-Dx)		100	100	430	<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)					<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		110	110	450	<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)					<5200		<5200		<5200	
Total Organic Carbon						<1000		<1000		<1000

Notes:
[1] Freshwater aquatic Screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998.
[2] Risk-Based Concentrations (RBCs) for ingestion & inhalation from tapwater, "Risk-Based Decisionmaking Guidance", DEQ, 2003, Table of Risk-Based Concentrations (updated June 7, 2012). RBCs for residential (Res), Urban Residential (URes), and Occupational (Occ) exposures.
[3] Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.
[4] Date of sampling.
Blank cell means not analyzed, or no available SLV/RBC. Detected concentration below practical quantitation limit (PQL) noted as (<) with its respective PQL value. ***Bolded*** *values are concentrations detected above the respective PQL.*
Grey shaded cells are PQLs greater than one or more respective DEQ RBC. Yellow shaded cells are detected concentrations that exceed one or more DEQ RBC.

5 FINDINGS AND CONCLUSIONS

The Site investigation, including soil and groundwater results reported in the May 2009 subsurface report, was intended to carry out a site investigation on a voluntary basis. No beneficial use has been identified for onsite groundwater, although groundwater likely discharges to the Willamette River downgradient from the site so discharge to surface water may be a potential beneficial use of the shallow groundwater. Groundwater data collected were tabulated and compared to DEQ RBCs for residential and occupational exposures.

Metals were generally not detected in groundwater at concentrations that exceed their RBCs although some of the metal RBCs were slightly higher than their SLVs. Carbon tetrachloride, 1,1,1-trichloroethane, carbon disulfide, and tetrachloroethene (PCE), were detected in shallow groundwater at very low concentrations that did not exceed their DEQ RBCs. Carbon tetrachloride and chloroform may be laboratory contaminants; chloroform may be a relic of potable water treatment.

No PCBs, PAHs or petroleum hydrocarbons were detected in shallow groundwater at concentrations that exceed DEQ RBCs.

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at concentrations that exceed DEQ risk-based concentration criteria. Because of the degree of attenuation likely to occur if these very low concentrations were to migrate offsite and discharge to the Willamette River more than ½ mile downgradient, these checmicals are not expected to present a threat to potential exposure by comingling with surface water near the river.

6 LIMITATIONS

This report has been prepared for use by the Oregon Department of Environmental Quality and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Oregon DEQ should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

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Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

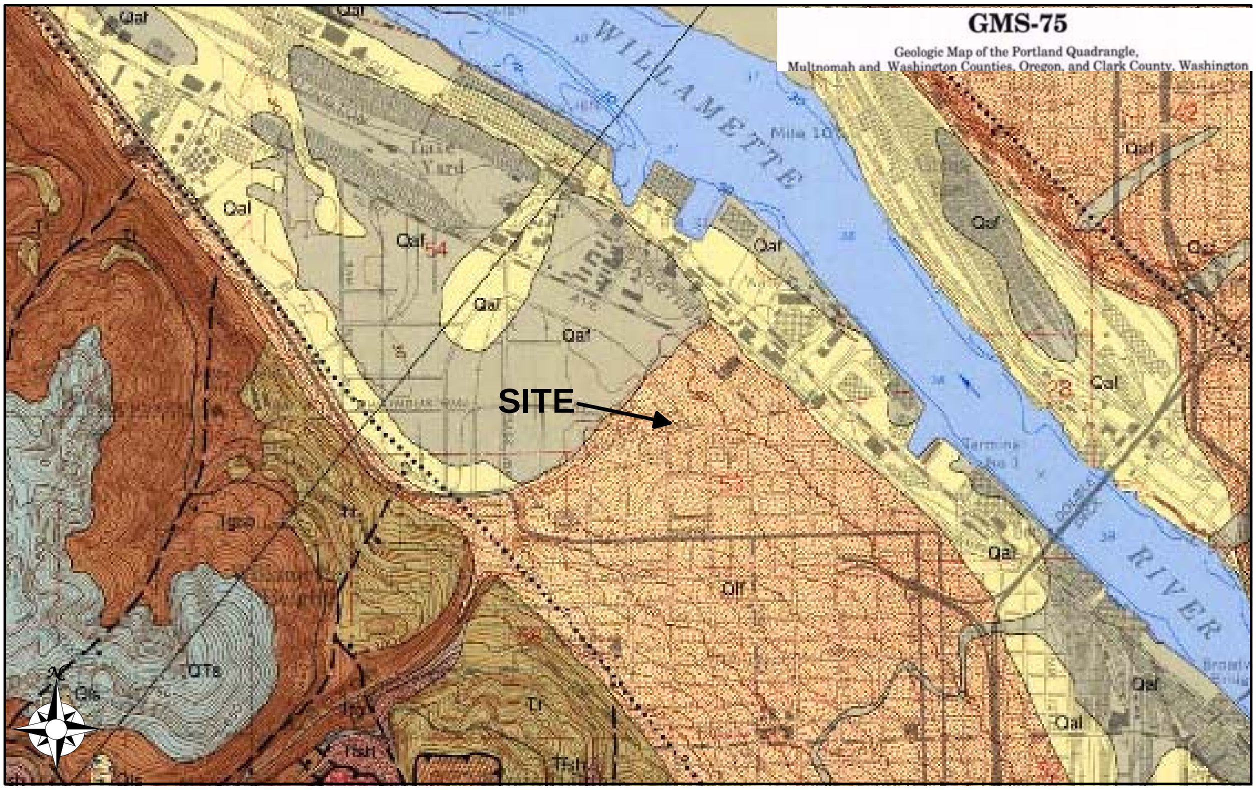
Richard C. Kent, R.G.

GeoPro LLC

Figure 1 – Location Map, Portland, Oregon

Guilds Lake Remediation Project

Figure 2 – Adjacent Properties, NW Nicolai St., Portland, Oregon



Legend

Qaf — **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal — **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff — **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 3 – Geology Map, Northwest Portland, Oregon

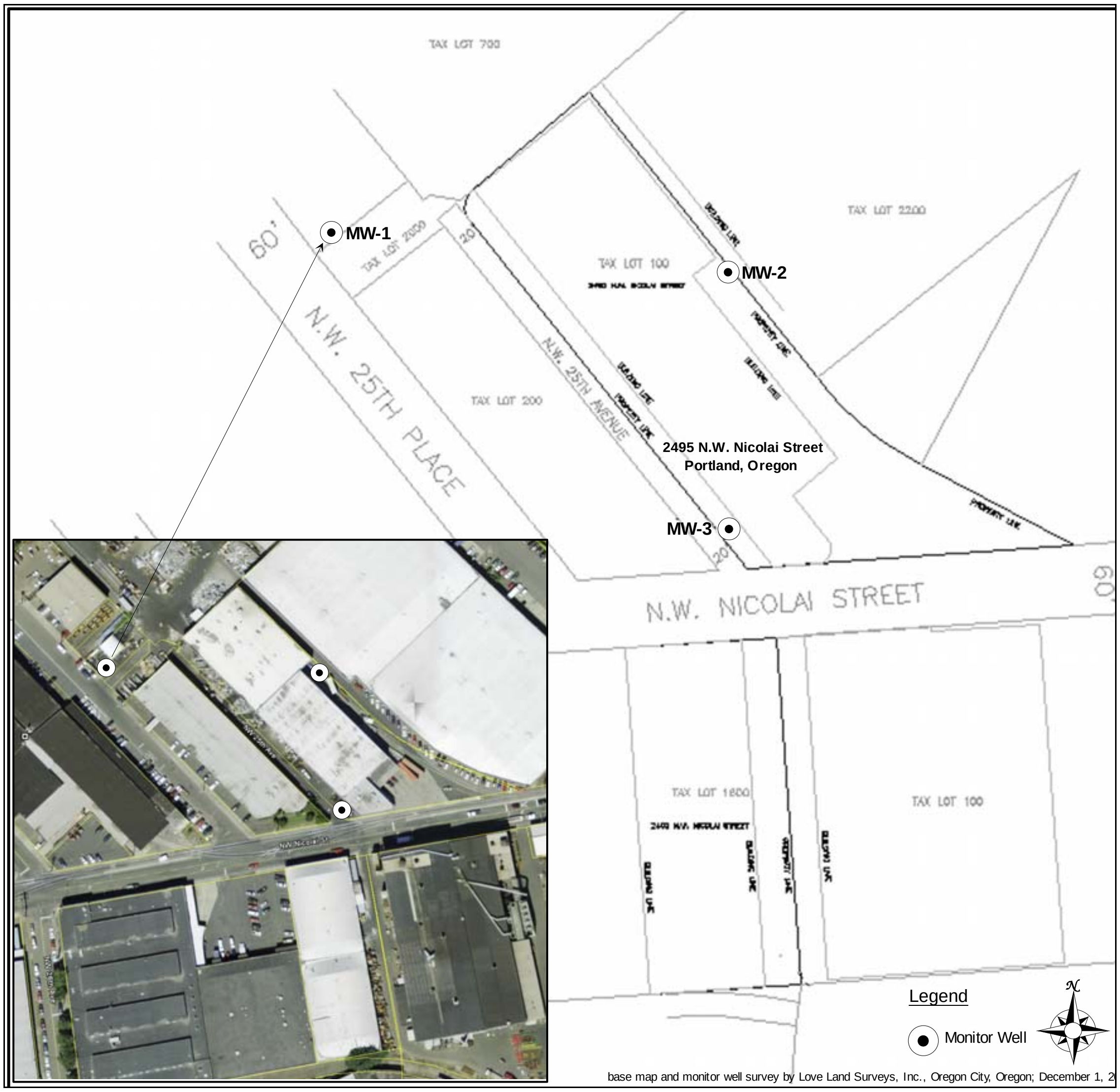


Figure 4 – Monitoring Well Locations

Figure 5 – Groundwater Flow Direction, March 2010

APPENDICES

Appendix A – Laboratory Report, March 2010

Appendix B - Groundwater Sample Logs March 2010

Appendix A
Laboratory Report
March 2010

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 2, 2010

Richard Kent
GeoPro, LLC
611 NW 5th Avenue
Battle Ground, WA 98604

Re: Analytical Data for Project 100322-A
Laboratory Reference No. 1003-170

Dear Richard:

Enclosed are the analytical results and associated quality control data for samples submitted on March 24, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

Case Narrative

Samples were collected on March 22 and 23, 2010 and received by the laboratory on March 24, 2010. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*74-121*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0324W1					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-164-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*93*	*93*	*74-121*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-39.5/49.55**					
Laboratory ID:	03-170-04					
Gasoline	**ND**	100	NWTPH-Gx	3-29-10	3-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*74-121*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0329W1					
Gasoline	**ND**	100	NWTPH-Gx	3-29-10	3-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*74-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-182-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*96*	*95*	*74-121*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-01				
Client ID:	**MW-1-40/50**				
Diesel Range	**ND**	0.25	3-30-10	3-30-10	Y
Lube Oil Range	**ND**	0.40	3-30-10	3-30-10	Y
Surrogate: o-terphenyl	95%	50-150			
Lab ID:	03-170-02				
Client ID:	**MW-2-39.5/49.5**				
Diesel Range	**ND**	0.25	3-30-10	3-30-10	Y
Lube Oil Range	**ND**	0.40	3-30-10	3-30-10	Y
Surrogate: o-terphenyl	86%	50-150			
Lab ID:	03-170-03				
Client ID:	**MW-3-45/55**				
Diesel Range	**ND**	0.25	3-30-10	3-30-10	Y
Lube Oil Range	**ND**	0.40	3-30-10	3-30-10	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-30-10
Date Analyzed:	3-30-10
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0330W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	81%
Flags:	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30-10

Matrix: Water
Units: mg/L (ppm)

Lab ID:	03-163-01	03-163-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	84%	84%
Flags:	Y	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01
Client ID: MW-1-40/50

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	1.2		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-01
Client ID: MW-1-40/50

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-02
Client ID: MW-2-39.5/49.5

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-02
Client ID: MW-2-39.5/49.5

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	86	71-126
Toluene-d8	88	76-116
4-Bromofluorobenzene	85	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	3-25-10
Date Analyzed:	3-25-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	03-170-03
Client ID:	**MW-3-45/55**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	0.28		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	0.81		0.20
1,1,1-Trichloroethane	0.46		0.20
Carbon Tetrachloride	0.31		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-03
Client ID: MW-3-45/55

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	87	71-126
Toluene-d8	88	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	3-25-10
Date Analyzed:	3-25-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0325W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0325W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0325W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	10.8	108	10.8	108	70-130	
Benzene	10.0	10.4	104	10.5	105	73-130	
Trichloroethene	10.0	10.2	102	10.0	100	79-122	
Toluene	10.0	10.5	105	10.4	104	80-121	
Chlorobenzene	10.0	9.87	99	9.66	97	83-116	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	0	15	
Benzene	1	14	
Trichloroethene	2	14	
Toluene	1	13	
Chlorobenzene	2	13	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	3-26-10
Date Analyzed:	3-26-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	03-170-04
Client ID:	**MW-4-39.5/49.55**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-170-04
Client ID: MW-4-39.5/49.55

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	0.51		0.40
o-Xylene	0.26		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	88	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	86	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0326W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0326W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	71-126
Toluene-d8	88	76-116
4-Bromofluorobenzene	85	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0326W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	10.8	108	11.1	111	70-130	
Benzene	10.0	10.5	105	10.8	108	73-130	
Trichloroethene	10.0	9.92	99	9.97	100	79-122	
Toluene	10.0	10.4	104	10.6	106	80-121	
Chlorobenzene	10.0	9.74	97	9.83	98	83-116	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	3	15	
Benzene	2	14	
Trichloroethene	1	14	
Toluene	2	13	
Chlorobenzene	1	13	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Naphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*47 - 105*				
Pyrene-d10	*94*	*35 - 129*				
Terphenyl-d14	*82*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Naphthalene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*47 - 105*				
Pyrene-d10	*97*	*35 - 129*				
Terphenyl-d14	*84*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Naphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*62*	*47 - 105*				
Pyrene-d10	*82*	*35 - 129*				
Terphenyl-d14	*74*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0325W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*47 - 105*				
Pyrene-d10	*96*	*35 - 129*				
Terphenyl-d14	*84*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0325W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.367**	**0.315**	0.500	0.500	73	63	49 - 101	15	34	
Acenaphthylene	**0.381**	**0.365**	0.500	0.500	76	73	54 - 113	4	27	
Acenaphthene	**0.386**	**0.370**	0.500	0.500	77	74	55 - 101	4	24	
Fluorene	**0.398**	**0.395**	0.500	0.500	80	79	60 - 104	1	20	
Phenanthrene	**0.411**	**0.411**	0.500	0.500	82	82	61 - 99	0	16	
Anthracene	**0.416**	**0.419**	0.500	0.500	83	84	60 - 109	1	16	
Fluoranthene	**0.422**	**0.430**	0.500	0.500	84	86	66 - 111	2	16	
Pyrene	**0.426**	**0.430**	0.500	0.500	85	86	66 - 113	1	17	
Benzo[a]anthracene	**0.421**	**0.421**	0.500	0.500	84	84	56 - 111	0	17	
Chrysene	**0.436**	**0.436**	0.500	0.500	87	87	55 - 102	0	19	
Benzo[b]fluoranthene	**0.427**	**0.434**	0.500	0.500	85	87	60 - 112	2	17	
Benzo[k]fluoranthene	**0.426**	**0.431**	0.500	0.500	85	86	45 - 114	1	21	
Benzo[a]pyrene	**0.411**	**0.418**	0.500	0.500	82	84	52 - 113	2	19	
Indeno(1,2,3-c,d)pyrene	**0.373**	**0.398**	0.500	0.500	75	80	34 - 124	6	21	
Dibenz[a,h]anthracene	**0.349**	**0.386**	0.500	0.500	70	77	26 - 129	10	31	
Benzo[g,h,i]perylene	**0.372**	**0.401**	0.500	0.500	74	80	26 - 127	8	25	
Surrogate:										
2-Fluorobiphenyl					*67*	*61*	*47 - 105*			
Pyrene-d10					*80*	*81*	*35 - 129*			
Terphenyl-d14					*75*	*75*	*36 - 106*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Lab Traveler: 1003-170
Project: 100322-A

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*76*	*39-126*				
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*73*	*39-126*				
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*76*	*39-126*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Lab Traveler: 1003-170
Project: 100322-A

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0331W1					
Aroclor 1016	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*75*	*39-126*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	03-150-12										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.468**	**0.456**	0.472	0.473	ND	**99**	**96**	60-140	3	20	
Surrogate:											
DCB						*78*	*78*	*39-126*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-01					
Client ID:	**MW1-40/50**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**ND**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-02					
Client ID:	**MW-2-39.5/49.5**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**ND**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-170-03					
Client ID:	**MW-3-45/55**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**4.4**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0330W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	56

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-26-10
Date Analyzed:	3-26-10
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0326W1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.50

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	56	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.50	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**108**	98	**119**	108	10	
Arsenic	110	**108**	98	**121**	110	12	
Beryllium	110	**105**	95	**116**	105	10	
Cadmium	110	**107**	97	**118**	107	10	
Chromium	110	**96.7**	88	**108**	98	11	
Copper	110	**104**	94	**114**	104	10	
Lead	110	**106**	96	**118**	107	11	
Nickel	110	**106**	96	**117**	107	10	
Selenium	110	**112**	102	**126**	115	12	
Silver	110	**105**	95	**117**	107	11	
Thallium	110	**106**	96	**115**	105	8	
Zinc	110	**111**	101	**122**	110	9	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL METALS
EPA 7470A
MS/MSD QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	12.5	**12.1**	97	**11.7**	94	3	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-40/50**					
Laboratory ID:	03-170-01					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	
Client ID:	**MW-2-39.5/49.5**					
Laboratory ID:	03-170-02					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	
Client ID:	**MW-3-45/55**					
Laboratory ID:	03-170-03					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-170
Project: 100322-A

TOTAL ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0330W1					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Analyte	Result		PQL	RPD	Limit	Flags
DUPLICATE						
Laboratory ID:	03-170-01					
	Sample	Duplicate				
Total Organic Carbon	**ND**	**ND**	1.0	NA	20	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	Flags
SPIKE BLANK						
Laboratory ID:	SB0330W1					
Total Organic Carbon	**14.5**	12.5	ND	**116**	80-120	
MATRIX SPIKE						
Laboratory ID:	03-170-01					
Total Organic Carbon	**14.1**	12.5	ND	**106**	75-125	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GeoPro LLC
Project Number: 100322-A
Project Name: Calbag 2495 Groundwater
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days) (TPH analysis 5 working days)
☐ ________ (other)

Laboratory Number: 03-170

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/~~BTEX~~	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082 (~~[illegible]~~)	Pesticides by 8081A	Herbicides by 8151A	Total ~~RCRA~~ Metals (8) PP	TCLP Metals DIS PP	HEM by 1664	TOC						% Moisture
1	MW-1-40/50	3/22/10	1118	W	16		X	X	X			X	X	~~X~~		X	~~X~~	~~X~~	X						
2	MW-2-39.5/49.5	3/22/10	1256	W	16		X	X	X			X	X	~~X~~		X	~~X~~	~~X~~	X						
3	MW-3-45/55	3/22/10	1015	W	16		X	X	X			X	X	~~X~~ NO DB		X	~~X~~ NO. DB	~~X~~ NO. DB -	X						
4	MW-4-39.5/49.55	3/23/10	1315	W	3		X		X																

	Signature	Company	Date	Time
Relinquished by	[signature]	GeoPro LLC	3/23/10	1630
Received by	[signature]	OSE	3/24/10	1000
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
3 coolers
X Added 3/25/10 . DB

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

Appendix B
Sample Field Logs
March 2010

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GROUNDWATER SAMPLE FIELD LOG

DAY/DATE: Monday, March 22, 2010	SHEET 1 of 1
PROJECT NAME: Calbag 2495 Groundwater	PROJECT NO.: 100322-A
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: ☐Fair ☒Overcast ☐Fog ☐Rain ☐Snow Temp.: ☐<0 ☐0-32 ☐33-54 ☒55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☒50-74 ☐>75	Wind: ☒Calm ☐Light ☐Moderate ☐Strong Wind from:☐N ☐NE ☐E ☐SE ☒S ☐SW ☐W ☐NW Precip.: ☐None ☐Mist ☐Light ☐Moderate ☐Heavy

WELL NO. (or Boring, Location): MW-1		**SAMPLE NUMBER: MW-1-40/50**
Well depth: 50 ft	Screen length: 10 ft	Laboratory: OnSite, Redmond, WA
Well install date: 11/1/08		COC and/or RFA Number:
Pre-purge SWL: 41.66		Casing diameter: 2 inch
Time Sample Collected:		SWL at sample time: 41.66
Sample Turbidity: 110 TDS		Sample Conductance: 220µ
Sample Color: clear		Sample pH: 7.17
Sample Temperature: 56.1 F		Sample Odor: none

Field Data pump depth: 46 ft bgs

Time (24 HR)	Temp	Cond	pH	Pump Rate or Bail No.	Turbidity	Other
1108	56.2	246	6.27		126	
1112	55.7	240	7.33		117	
1116	56.1	220	7.17		110	

Sample Collection Method:

The monitor well was purged:

☒ of stagnant water in the casing and filter by slowly setting a pump or intake tubing within the approximate middle of the screened interval or slightly above the middle until the until the temperature, conductivity and pH stabilized. OR,

☐ of stagnant water in the casing and filter by slowly setting a pump or intake tubing at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized. OR,

☐ by hand bailing until temperature, conductivity and pH stabilized.

Samples were collected:

☒by setting a pump, or tubing attached to a pump, within the approximate middle of the screened interval until the temperature, conductivity and pH stabilized.

☐ by setting a pump, or tubing attached to a pump, at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized.

☐ with disposable bailers until the temperature, conductivity and pH stabilized.

Sample Shipment:

Water samples were placed in appropriate containers suitable for analyses requested. As necessary, the containers were prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest at approximately 4°C (e.g. blu-ice) for transport to the laboratory.

Analysis Requested: (per laboratory protocols)

☐ NWTPH-HCID; ☒ NWTPH-Gx; ☒NWTPH-Dx; ☐ NWTPH-Gx/BTEX; ☒VOC; ☐ HVOC;

☐ SemiVOC; ☒PAH; ☒PCB; ☒Pesticides; ☒8, ☐10, ☐13) Metals; ☐ TCLP; ☐ MTBE;

☒OTHER: DIS Metals, HEM, TOC

SIGNATURE: Patrick Kent

PRINT NAME: Patrick Kent

Notes: 2-inch, Schedule 40 PVC casing = 0.163 gallons per foot; 6" Hole = 1.469 gallons per foot

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GROUNDWATER SAMPLE FIELD LOG

DAY/DATE: Monday, March 22, 2010	SHEET 1 of 1
PROJECT NAME: Calbag 2495 Groundwater	PROJECT NO.: 100322-A
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: ☐Fair ☒Overcast ☐Fog ☐Rain ☐Snow Temp.: ☐<0 ☐0-32 ☒33-54 ☐55-79 ☐>80 Humidity %: ☐<25 ☒26-49 ☐50-74 ☐>75	Wind: ☐Calm ☒Light ☐Moderate ☐Strong Wind from:☐N ☐NE ☐E ☐SE ☐S ☐SW ☒W ☐NW Precip.: ☒None ☐Mist ☐Light ☐Moderate ☐Heavy

WELL NO. (or Boring, Location): MW-2		**SAMPLE NUMBER: MW-2-39.5/49.5**
Well depth: 49.5 ft	Screen length: 10 ft	Laboratory: OnSite, Redmond, WA
Well install date: 10/31/08		COC and/or RFA Number:
Pre-purge SWL: 45.65		Casing diameter: 2 inch
Time Sample Collected: 1256		SWL at sample time: 45.6
Sample Turbidity: 213		Sample Conductance: 423
Sample Color: clear		Sample pH: 8.14
Sample Temperature: 58.4 F		Sample Odor: none

Field Data

Time (24 HR)	Temp	Cond	pH	Pump Rate or Bail No.	Turbidity	Other
1245	60.7	430	6.80	<1.5 gpm	204	clear
1250	59.4	427	8.48	<1.5 gpm	205	clear
1255	58.4	423	8.14	<1.5 gpm	213	clear

Sample Collection Method:

The monitor well was purged:

☒ of stagnant water in the casing and filter by slowly setting a pump or intake tubing within the approximate middle of the screened interval or slightly above the middle until the until the temperature, conductivity and pH stabilized. OR,

☐ of stagnant water in the casing and filter by slowly setting a pump or intake tubing at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized. OR,

☐ by hand bailing until temperature, conductivity and pH stabilized.

Samples were collected:

☒by setting a pump, or tubing attached to a pump, within the approximate middle of the screened interval until the temperature, conductivity and pH stabilized.

☐ by setting a pump, or tubing attached to a pump, at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized.

☐ with disposable bailers until the temperature, conductivity and pH stabilized.

Sample Shipment:

Water samples were placed in appropriate containers suitable for analyses requested. As necessary, the containers were prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest at approximately 4°C (e.g. blu-ice) for transport to the laboratory.

Analysis Requested: (per laboratory protocols)

☐ NWTPH-HCID; ☒ NWTPH-Gx; ☒NWTPH-Dx; ☐ NWTPH-Gx/BTEX; ☒VOC; ☐ HVOC;

☐ SemiVOC; ☒PAH; ☒PCB; ☒Pesticides; ☒8, ☐10, ☐13) Metals; ☐ TCLP; ☐ MTBE;

☒OTHER: DIS Metals, HEM, TOC

SIGNATURE: ____________

PRINT NAME: Richard Kent____

Notes: 2-inch, Schedule 40 PVC casing = 0.163 gallons per foot; 6" Hole = 1.469 gallons per foot

GeoPro Geologic Services LLC
Post Office Box 26
Battle Ground, WA 98604
(360) 666-1465

GROUNDWATER SAMPLE FIELD LOG

DAY/DATE: Monday, March 22, 2010	SHEET 1 of 1
PROJECT NAME: Calbag 2495 Groundwater	PROJECT NO.: 100322-A
PROJECT LOCATION: 2495 NW Nicolai St., Portland, OR	
Weather: ☐Fair ☒Overcast ☐Fog ☐Rain ☐Snow Temp.: ☐<0 ☐0-32 ☐33-54 ☒55-79 ☐>80 Humidity %: ☐<25 ☐26-49 ☒50-74 ☐>75	Wind: ☐Calm ☒Light ☐Moderate ☐Strong Wind from:☐N ☐NE ☐E ☐SE ☒S ☐SW ☐W ☐NW Precip.: ☒None ☐Mist ☐Light ☐Moderate ☐Heavy

WELL NO. (or Boring, Location): MW-3	**SAMPLE NUMBER: MW-3-45/55**
Well depth: 55 ft / Screen length: 10 ft	Laboratory: OnSite, Redmond, WA
Well install date: 11/1/08	COC and/or RFA Number:
Pre-purge SWL: 48.23 ft	Casing diameter: 2 inch
Time Sample Collected: 1015	SWL at sample time: 48.2
Sample Turbidity: 249 ppm	Sample Conductance: 490
Sample Color: clear	Sample pH: 5.56
Sample Temperature: 56.3 F	Sample Odor: none

Field Data

Time (24 HR)	Temp	Cond	pH	Pump Rate or Bail No.	Turbidity	Other
1002	56.2	928	4.11		clear	
1007	56.5	588	5.07		313 ppm	
1012	56.3	490	5.56		249 ppm	

Sample Collection Method:

The monitor well was purged:

☒ of stagnant water in the casing and filter by slowly setting a pump or intake tubing within the approximate middle of the screened interval or slightly above the middle until the until the temperature, conductivity and pH stabilized. OR,

☐ of stagnant water in the casing and filter by slowly setting a pump or intake tubing at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized. OR,

☐ by hand bailing until temperature, conductivity and pH stabilized.

Samples were collected:

☒by setting a pump, or tubing attached to a pump, within the approximate middle of the screened interval until the temperature, conductivity and pH stabilized.

☐ by setting a pump, or tubing attached to a pump, at approximately _____ feet above the bottom of the casing until the temperature, conductivity and pH stabilized.

☐ with disposable bailers until the temperature, conductivity and pH stabilized.

Sample Shipment:

Water samples were placed in appropriate containers suitable for analyses requested. As necessary, the containers were prepared by the lab. The containers were filled to prevent air-entrapment, sealed, labeled, and placed in an ice chest at approximately 4°C (e.g. blu-ice) for transport to the laboratory.

Analysis Requested: (per laboratory protocols)

☐ NWTPH-HCID; ☒ NWTPH-Gx; ☒NWTPH-Dx; ☐ NWTPH-Gx/BTEX; ☒VOC; ☐ HVOC;

☐ SemiVOC; ☒PAH; ☒PCB; ☒Pesticides; ☒8, ☐10, ☐13) Metals; ☐ TCLP; ☐ MTBE;

☒OTHER: DIS Metals, HEM, TOC

SIGNATURE: ________________

PRINT NAME: _Patrick Kent____

Notes: 2-inch, Schedule 40 PVC casing = 0.163 gallons per foot; 6” Hole = 1.469 gallons per foot

Appendix B
Groundwater Monitoring Report
2500 NW Nicolai Street, Portland, Oregon

GROUNDWATER MONITORING REPORT

CALBAG METALS COMPANY FACILITY
2500 NW NICOLAI STREET
PORTLAND, OREGON
ECSI No. 5238

Prepared for

Shaker Square LLC

P. O. Box 10067

Portland, Oregon 97296-0067

Prepared by

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Contents

<u>Figures</u>

<u>Tables</u>

<u>Appendices</u>

1 INTRODUCTION

1.1 Purpose

This Report is prepared for Shaker Square LLC for their property located at 2500 NW Nicolai Street, Portland, Oregon (Site). This Groundwater Monitoring Report is in partial response to an Oregon Department of Environmental Quality (DEQ) Independent Cleanup Program (ICP) Agreement.

DEQ reviewed a Site subsurface investigation report, "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009, and provided comments in a letter dated October 28, 2009 that included the need to conduct an additional round of groundwater sampling during February or March 2010. The purpose of this groundwater monitoring report is to summarize all Site groundwater monitoring data and to evaluate the nature and extent of potential contamination in shallow groundwater. Groundwater monitoring is carried out to support a potential No Further Action (NFA) determination for the Site.

1.2 Scope of Services

This work is performed to determine whether contaminants, primarily metals, have impacted shallow groundwater beneath the Site. The following are specific objectives:

1. Conduct a second round of groundwater monitoring to include water level measurement and groundwater sampling, for three onsite monitor wells.
2. Determine shallow groundwater gradient beneath the Site for the March 2010 monitoring event.
3. Evaluate the nature and extent of contamination in shallow groundwater.

2 BACKGROUND

2.1 Site Description

The Site is located at 2500 NW Nicolai Street, Portland, Oregon (see Figure 1). Site facilities include a large building used as a metal recycling warehouse. The 30,000 square-foot building consists of wood and steel-framing on a concrete foundation, with concrete exterior walls and a flat roof. Historical records indicate the building on the Site was constructed on undeveloped land in 1949, and has been occupied since that time.

The Site is operated by Calbag Metals Company ("Calbag"). Calbag purchases used and scrap nonferrous metal, then cuts, sorts, and packages the metals for resale. The purchased metals include primarily aluminum, brass, stainless steel, zinc alloys, nickel alloys, lead, titanium, magnesium and copper. The metal arrives at the Site in various forms, including sheets, plates, piping, castings, and wire. Hazardous materials are not accepted, including batteries or items with contaminants containing mercury or polychlorinated biphenyls (PCBs). Fabrication does not occur at the Site.

2.2 Physical Setting

The Site consists of 0.9 acres of land developed with the industrial building, and 0.23 acres of undeveloped land. The ground surface at the site slopes gradually to the northeast. Ground cover consists primarily of a building and asphalt parking. The site is zoned industrial. The Site and adjacent properties are shown in Figure 3.

The Site is located within Pleistocene fine-grained facies geologic units of coarse sand to silt deposited by catastrophic floods (see Figure 2). Quaternary alluvium deposits of river deposits of silt, sand and organic-rich clay separate the Site from the Willamette River. The geologic map depicts Holocene artificial fill composed of sand, silt and clay with various amounts of gravel, debris, sawdust and mill ends that were deposited to the north of the Site.

2.3 Previous Assessments

In response to a US Environmental Protection Agency (EPA) CERCLA Section 104(e) information request, Site information was summarized in "Responses to U.S. EPA CERCLA Section 104(e) Information Request", dated July 2008, and was submitted to EPA.

A soil and groundwater investigation was conducted between October 2008 and January 2009, and included drilling and sampling three soil borings and installation of three monitoring wells. An initial round of groundwater samples were collected from the monitoring wells. Results of the soil and groundwater investigation were summarized in "Environmental Site Assessment Subsurface, Calbag Facility", dated May 2009. The findings of the report include (1) barium, chromium and lead were detected and only lead was detected above the DEQ soil screening levels, (2) pesticides were not detected in soil and are not identified as a site contaminant, (3) PCBs were not detected in soil and are not identified as a site contaminant, (4) several polynuclear aromatic hydrocarbons (PAHs) were detected in one soil sample at elevated concentrations, (5) petroleum hydrocarbons were not detected in soil, and (6) four volatile organic chemicals were detected in groundwater at very low concentrations including carbon tetrachloride, chloroform, o-xylene and tetrachloroethene.

3 INVESTIGATION ACTIVITIES

A second round of groundwater monitoring was conducted in March 2010 and included measurement of groundwater levels and sampling groundwater in three onsite monitor wells. Monitor well MW-4 was installed in October 2008, and wells MW-5 and MW-6 were installed in January 2009. Initial groundwater monitoring was conducted shortly after the monitor wells were installed in November 2008 and February 2009. The initial data was reported in the May 2009 subsurface report, and is included here for completeness.

3.1 Groundwater Monitoring

Groundwater levels were measured in each monitoring well prior to sampling groundwater. At each well, the locking cap was removed and the conditions in the well were allowed to equilibrate to external conditions. General weather and well conditions, as well as monitoring data, were noted on the monitoring logs included in Appendix A. To measure water levels, a water level probe was lowered into the well until the probe contacted the water surface in the well, signaled by a buzzer. The depth in feet to the water surface was measured from a surveyed measuring point on the rim of the well casing and the elevation of the water surface was calculated with respect to feet above sea level.

Once groundwater levels were measured, well purging and groundwater sampling in each monitor well was conducted using low-flow techniques. A pump and dedicated polyethylene tubing were lowered into the well casing and positioned toward the middle of the well screen. The low-flow pump was then turned on and the pump rate set low enough to minimize drawdown of the water level within the well during purging. The monitor wells were purged and groundwater quality parameters, including temperature, pH, and conductivity, were periodically monitored until they stabilized.

Turbidity was visually monitored and recorded, and was also used as an indication of when the groundwater was stable for sampling. After stabilization was reached, a groundwater sample was collected following the low-flow technique described above. Groundwater samples were prepared according to protocol established by the analytical laboratory.

A chain of custody was prepared for all samples. Appropriate decontamination procedures were followed to prevent cross contamination of the drilling equipment between boreholes, and of groundwater samples between sample depths and between boring locations. Any investigation derived waste, soil and groundwater, was collected and disposed by Calbag.

3.2 Chemical Analyses and Methods

Metals and petroleum hydrocarbons are the main chemicals of concern based on the operations of the facility. In addition, the Guilds Lake Remediation Project and other offsite properties in the vicinity of the Site previously detected hazardous substances including PCBs, petroleum hydrocarbons, oil and grease, chromium, lead, arsenic and cadmium. Selected soil and groundwater samples from the Site were analyzed for at least constituents detected in the vicinity. Both pesticides and PCBs have not been identified as Site-specific contaminants.

All groundwater samples were analyzed for petroleum hydrocarbons by NWTPH, volatile organics (VOCs) by EPA Method 8260B, PAHS by EPA Method 8270D/SIM, PCBs by EPA Method 8082, pesticides by EPA Method 8081A, total and dissolved Priority Pollutant Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by EPA Method 200.8/7470A, hexane extractable material ("HEM" – oil and grease) by EPA Method 1664, and total organic carbon (TOC). Dissolved metals were analyzed only for the November 2009 groundwater sampling round.

4 GROUNDWATER MONITORING RESULTS

Data quality objectives for this investigation are to generate data of known and documented quality that can be used to determine whether chemicals of potential concern are present in shallow groundwater above concentrations of concern. Groundwater sampling data were evaluated by comparing to appropriate screening criteria to support a potential NFA determination for the Site.

4.1 Groundwater Monitoring

Groundwater levels were measured in all wells during the round of groundwater monitoring on February 20, 2009, and again on March 22 and 30, 2010. During the second round of groundwater monitoring, equipment failure required a return trip to the Site on March 30 to complete the groundwater monitoring. Groundwater level measurements for both rounds of groundwater monitoring, as well as elevations and surveyed locations of the monitor wells are presented in Table 1.

Groundwater gradients for the February 2009 and March 2010 monitoring events are shown on the maps of Figure 5 and 6. The shallow groundwater gradient beneath the Site is very low to flat. Based on measured water levels, shallow groundwater flows generally to the north, toward Nicolai Street and in the general downstream flow direction of the Willamette River. In this area of northwest Portland, shallow groundwater flow may be influenced by differences in permeability between the Pleistocene catastrophic flood deposits beneath the Site and the artificial fill to the north-northwest, buried channels within the flood deposits, and/or tidal influence. Further investigation would be required to better define the groundwater flow directions and gradients with respect to the general vicinity of the Site.

Table 1 – Groundwater Static Water Levels

MONITOR WELL	ELEVATION		OREGON NORTH STATE PLANE COORDINATES		TOTAL DEPTH	SCREENED INTERVAL	DATE	SWL	SWL ELEVATION
	RIM	TOP OF PIPE	NORTH	EAST					
MW-4	65.357	65.118	690469.698	7637709.180	55	45/55	2/20/09	48.69	16.43
							3/30/10	50.52	14.6
MW-5	64.22	64.02	690697.319	7637695.231	50	40/50	2/20/09	47.71	16.31
							3/22/10	49.57	14.45
MW-6	67.17	66.95	690566.067	7637672.419	55	45/55	2/20/09	50.58	16.37
							3/22/10	52.43	14.52

Notes:
Depths, elevations and levels in feet. Elevations referenced to NAVD 88. "SWL" = Static Water Level.
Monitor Well MW-4 installed November 1, 2008; MW-5 and MW-6 installed January 31, 2009.
Data by Love Land Surveys, Inc., Oregon City, OR, December 1, 2008 and March 3, 2009.

4.2 Analytical Results

Results of November 2008/February 2009 and March 2010 groundwater sample laboratory analyses are summarized in the following Table 2. Laboratory reports are included in Appendix A. Shallow groundwater beneath the Site is not currently used for consumption, since water use is served by the City of Portland Water Bureau, and no plans exist for future use of shallow groundwater. Groundwater flowing from beneath the Site flows to toward the Willamette River and likely discharges to the river a distance of ½ mile or more downgradient from the Site. A potential beneficial use of groundwater may be discharge to surface water. Therefore, based on current and reasonable future use of groundwater, concentrations of chemicals that were detected in groundwater were compared to DEQ screening level values (SLVs) for freshwater aquatic receptors. Constituents that were detected at concentrations that exceed DEQ SLVs are shaded yellow.

In general, total and dissolved metals were not detected in groundwater from the three monitor wells. However, the practical quantitation limits (PQLs) for beryllium, cadmium, copper, and selenium are slightly higher to two times higher than their SLVs. The PQL for silver is two orders of magnitude higher than its SLV. The exception is for well MW-4 during the March 2010 monitoring, where four total metals (chromium, copper, lead and zinc) were detected at concentrations that were up to two times higher than their SLVs. Total metals concentrations may not be representative of dissolved conditions as they may also be measuring soil particles incorporated into samples. During sampling of MW-4, pump problems may have increased the MW4 sample turbidity. The March 2010 samples were not analyzed for dissolved metals.

PCBs and pesticides were not detected in Site groundwater and are also not identified as Site contaminants, although they are detected in other locations in the general Site vicinity. The PQL for aroclor 1254 was slightly higher than its SLV. No source of PCB soil contamination was identified in the soil samples reported in the May 2009 subsurface investigation report.

PAHs were not detected in Site groundwater at concentrations exceeding DEQ SLVs. Petroleum hydrocarbons were not detected; petroleum hydrocarbons constituents would be evaluated through VOC SLVs.

Four VOCs, including carbon tetrachloride, chloroform, o-xylene and tetrachloroethene (PCE), were detected in shallow groundwater at very low concentrations that did not exceed their DEQ SLVs. Chloroform was detected in MW-4 (1.2 ug/l) and MW-5 (3.2 ug/l) during the March 2010 sampling event. PCE was detected in MW-4 (0.3 ug/l) and MW-6 (0.21 ug/l) during the February 2009 sampling event. Chloroform and carbon tetrachloride are not chemicals used on the Site and may be either laboratory contaminants, or for chloroform, a relic of potable water treatment. PCE also is not a chemical used on the Site and was detected at a higher concentration at the upgradient margin of the property.

Table 2 - Groundwater Analyses Monitor Wells

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
METALS-TOTAL (EPA 6010B/7471A)							
Antimony	1600	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	<3.3	**6.2**	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	<11	<11	<11	<11	<11	<11
Cadmium	2.2	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium (VI)	11	<11	**24**	<11	<11	<11	<11
Copper	9	<11	**28**	<11	<11	<11	<11
Lead	2.5	<1.1	**9.7**	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	<22	**25**	<22	<22	<22	<22
Selenium	5	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12	<11	<11	<11	<11	<11	<11
Thallium	40	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120	<28	**160**	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)							
Antimony	1600	<5		<5		<5	
Arsenic	150	<3		<3		<3	
Beryllium	5.3	<10		<10		<10	
Cadmium	2.2	<4		<4		<4	
Chromium (total)	11	<10		<10		<10	
Copper	9	<10		<10		<10	

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Lead	2.5	<1		<1		<1	
Mercury	0.77	<0.5		<0.5		<0.5	
Nickel	52	<20		<20		<20	
Selenium	5	<5		<5		<5	
Silver	0.12	<10		<10		<10	
Thallium	40	<5		<5		<5	
Zinc	120	<50		<50		<50	
PCBs AROCLORS (EPA 8082)							
Aroclor 1016		<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)							
alpha-BHC	2.2	<0.0047		<0.0047		<0.0047	
beta-BHC	2.2	<0.0047		<0.0047		<0.0047	
delta-BHC		<0.0047		<0.0047		<0.0047	
gamma-BHC (Lindane)	0.052	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	<0.0047		<0.0047		<0.0047	
Aldrin	0.06	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	<0.0047		<0.0047		<0.0047	

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
alpha-Chlordane	0.0043	<0.0047		<0.0047		<0.0047	
4,4'-DDE		<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	<0.0047		<0.0047		<0.0047	
Endrin	0.036	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde		<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03	<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate		<0.0047		<0.0047		<0.0047	
Endrin Ketone		<0.019		<0.019		<0.019	
Toxaphene	0.0002	<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)							
1,1,1,2-Tetrachloroethane	186	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrachoroethane	2200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		MW-4 (45-55) ug/l[2]		MW-5 (40-50) ug/l		MW-6 (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
1,2-Dibromo-3-chloropropane		<1	<1	<1	<1	<1	<1
1,2-Dibromoethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	20000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)		<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4760	<1	<1	<1	<1	<1	<1
2-Chlorotoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99	<2	<2	<2	<2	<2	<2
4-Chlorotoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1500	<5	<5	<5	<5	<5	<5
Benzene	130	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromobenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		<1	<1	<1	<1	<1	<1
Bromomethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Tetrachloride	74	<0.2	<0.2	<0.2	<0.2	**0.35**	<0.2
Chlorethane		<1	<1	<1	<1	<1	<1
Chlorobenzene	50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Chloroform	1240	<0.2	**1.2**	<0.2	**3.2**	<0.2	<0.2
Chloromethane		<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethylene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene							
Hexachlorobutadiene	9.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)		<1	<1	<1	<1	<1	<1
Isopropylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2200	<1	<1	<1	<1	<1	<1
Methyt-Butyl Ether		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone		<2	<2	<2	<2	<2	<2
Naphthalene	620	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		<0.2	<0.2	<0.2	<0.2	<0.2	**0.22**
p-Isopropyltoluene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethene	840	**0.3**	<0.2	<0.2	<0.2	**0.21**	<0.2

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Toluene	9.8	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21900	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16	<2	<2	<2	<2	<2	<2
Vinyl Chloride		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)							
Naphthalene	620	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
2-Methylnaphthalene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
1-Methylnaphthalene	201	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Acenaphthylene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Acenpththene	520	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Fluorene	3.9	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Phenanthrene	6.3	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Anthracene	13	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Fluoranthene	6.16	<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Pyrene		<0.095	<0.095	<0.095	<0.094	<0.094	<0.094
Benzo(a)anthracene	0.027	<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Chrysene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(b)fluoranthene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(k)fluoranthene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(a)pyrene	0.014	<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Ideno(1,2,3-c,d)pyrene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094

		MW-4 (45-55) ug/l[2]		**MW-5** (40-50) ug/l		**MW-6** (45-55) ug/l	
CHEMICALS	DEQ SLV[1] ug/l	11/10/08[3]	3/30/10[3]	2/20/09[3]	3/22/10[3]	2/20/09[3]	3/22/10[3]
Dibenz(a,h)anthracene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
Benzo(g,h,i)perylene		<0.0095	<0.0095	<0.0095	<0.0094	<0.0094	<0.0094
PETROLEUM HYDROCARBONS							
Diesel Range (NWTPH-Dx)		<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)		<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)		<5200		<5200		<5200	
Total Organic Carbon			<1000		<1000		<1000

Notes:
1Freshwater aquatic screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998. Blank cell means no criterion available.
[2]Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.
[3]Blank cells mean not analyzed.
Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value. ***Bolded*** *values are concentrations detected above the respective PQL.*
Grey shaded cells are PQLs greater than DEQ SLV; Yellow shaded cells are detected concentrations that exceed DEQ SLVs.

5 FINDINGS AND CONCLUSIONS

The Site investigation, including soil and groundwater results reported in the May 2009 subsurface report, was intended to carry out a site investigation on a voluntary basis. No beneficial use has been identified for onsite groundwater, although groundwater likely discharges to the Willamette River downgradient from the site so discharge to surface water may be a potential beneficial use of the shallow groundwater. Groundwater data collected were tabulated and compared to DEQ SLVs for freshwater aquatic receptors.

Metals were generally not detected in groundwater at concentrations that exceed their SLVs although some of the metal PQLs were slightly higher than their SLVs. The exception is MW-4 for the March 2010 sampling event where total chromium, copper, lead, and zinc were detected at concentrations up to two times higher than their SLVs. However, because these are total concentrations (dissolved metals were not analyzed for in March 2010) they may not be representative of dissolved concentrations. None of these metals were detected in onsite soil at concentrations that exceeded risk-based screening levels.

Carbon tetrachloride, chloroform, o-xylene and PCE were detected in shallow groundwater at very low concentrations that did not exceed their DEQ SLVs. Carbon tetrachloride and chloroform may be laboratory contaminants; chloroform may be a relic of potable water treatment.

No PCBs, PAHs or petroleum hydrocarbons were detected in shallow groundwater at concentrations that exceed DEQ SLVs.

In general, the investigation and evaluation of analytical results indicates that chemicals are not present at concentrations that exceed DEQ screening criteria. Because of the degree of attenuation likely to occur if these very low concentrations were to migrate offsite and discharge to the Willamette River more than ½ mile downgradient, are not expected to present a threat to aquatic receptors in the river.

6 LIMITATIONS

This report has been prepared for use by the Oregon Department of Environmental Quality and is not intended for use by others except the landowner(s) or landowner's agents. Each project and project site is unique and the information contained in this report is not applicable to other sites. Only the Oregon DEQ should rely upon this report and all others should contact GeoPro LLC before applying or interpreting any information in this report.

GeoPro LLC does not accept liability or responsibility for detachment, partial use, separation, or reproduction without color, if used, which may depict significant information, by third parties and such use shall be at user's sole risk.

Records, documentation, and personal communication have been relied upon in good faith; however, no responsibility is accepted for errors or omissions of work by others. Services were performed in accordance with generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time services are rendered. GeoPro LLC is not responsible for references to regulatory terms, practices, numeric data, practices or conditions that may lead to other conclusions if such references are not in final form.

Conclusions and findings apply only to present conditions, and opinions expressed are subject to revision when additional or new information is presented and reviewed. This warranty is in lieu of all other warranties, either expressed or implied. It is possible that explorations failed to reveal the presence of hazardous materials at areas where hazardous materials were assumed, suspected or expected to exist (hazardous as used herein shall also mean contaminated and polluted). Through use of this report it is understand that failure to sample soil or water, or install groundwater monitoring wells at locations through appropriate and mutually agreed-upon techniques does not guarantee that hazardous materials have, or will be, detected at such locations. Similarly, areas which in fact are unaffected by hazardous materials at the time of this report, may later, due to natural causes or human intervention, become contaminated. GeoPro LLC is not responsible for failing to locate hazardous materials which have not discovered at the time of this report or in the future. This report should not be construed as presenting a value to neither the Site nor the condition as to construction capabilities. In the event of changes in future development plans as understood at the time of this report, the conclusions and recommendations made herein shall be invalid until given the opportunity to review and modify this report in writing. Portions of an Agreement to perform professional services may or may not be disclosed in this report.

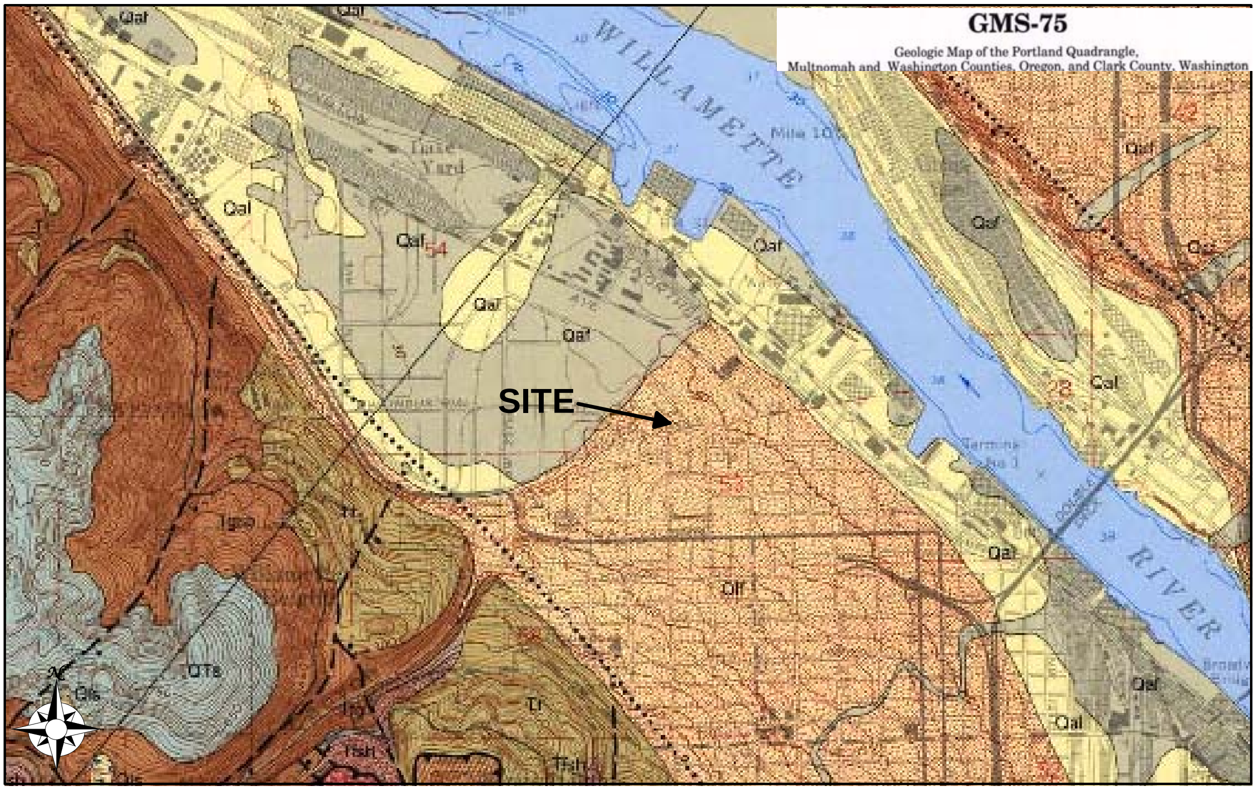
Richard C. Kent, R.G.

GeoPro Geologic Services LLC

Figure 1 – Location Map, Portland, Oregon

Guilds Lake Remediation Project

Figure 2 – Adjacent Properties, NW Nicolai St., Portland, Oregon



Legend

Qaf **Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map

Qal **Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m

Qff **Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 3 – Geology Map, Northwest Portland, Oregon

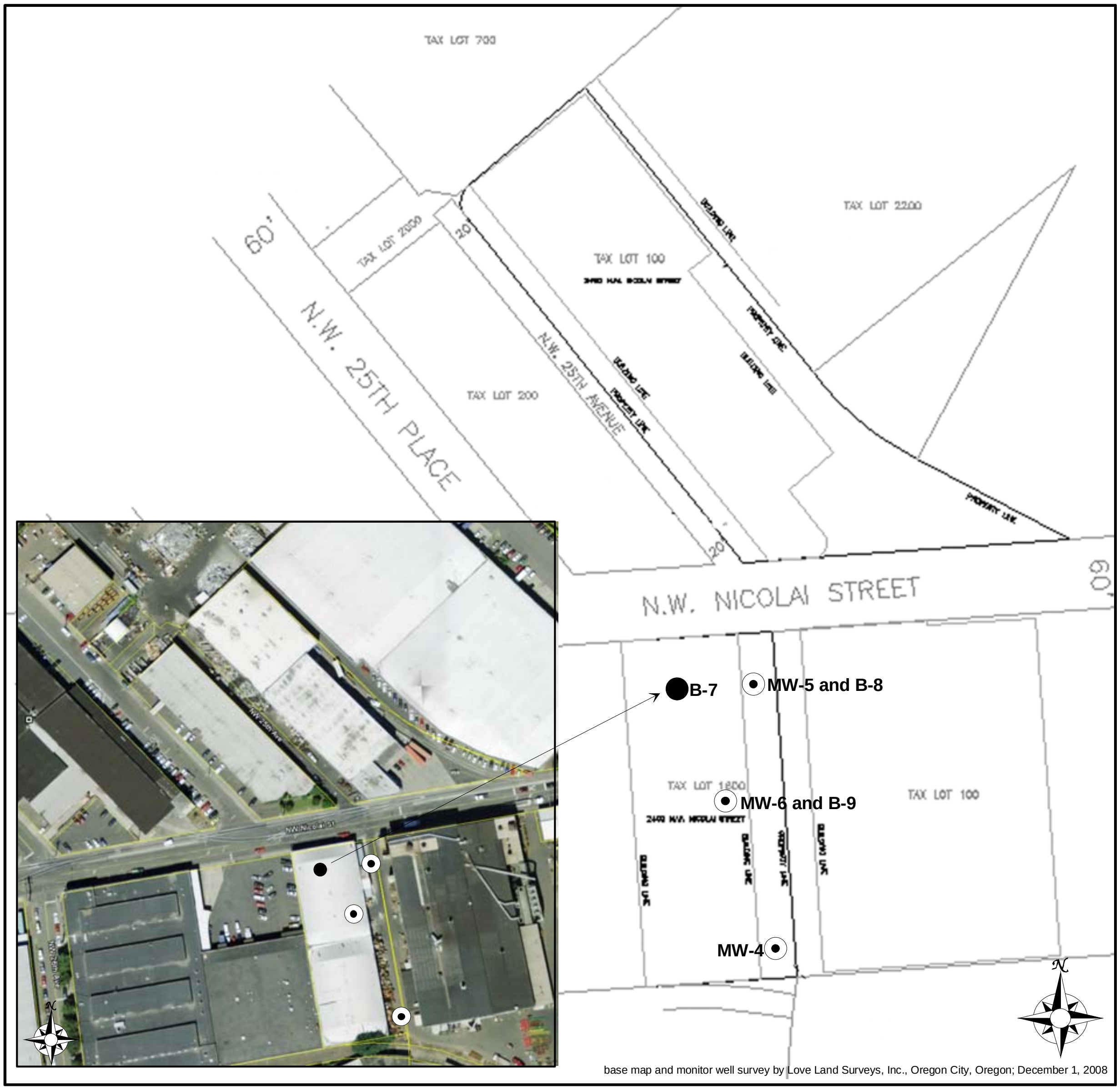


Figure 4 – Monitoring Well Locations

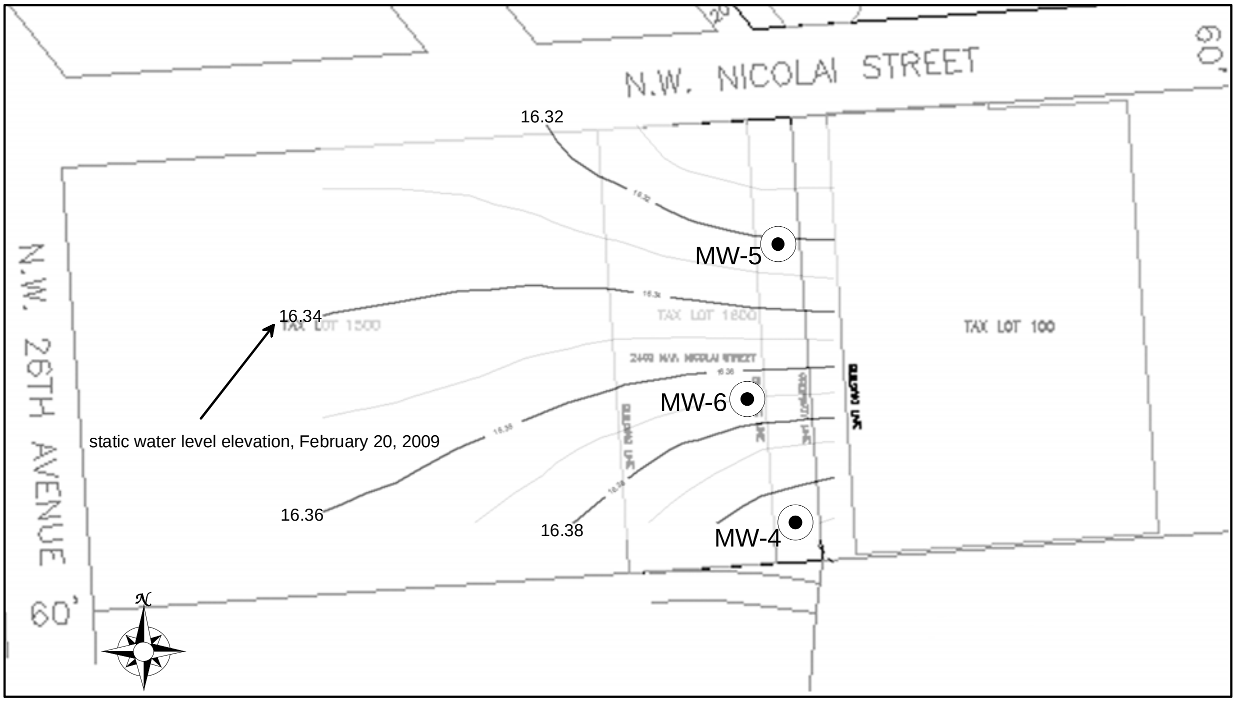


Figure 5 – Groundwater Flow Direction, February 20, 2009

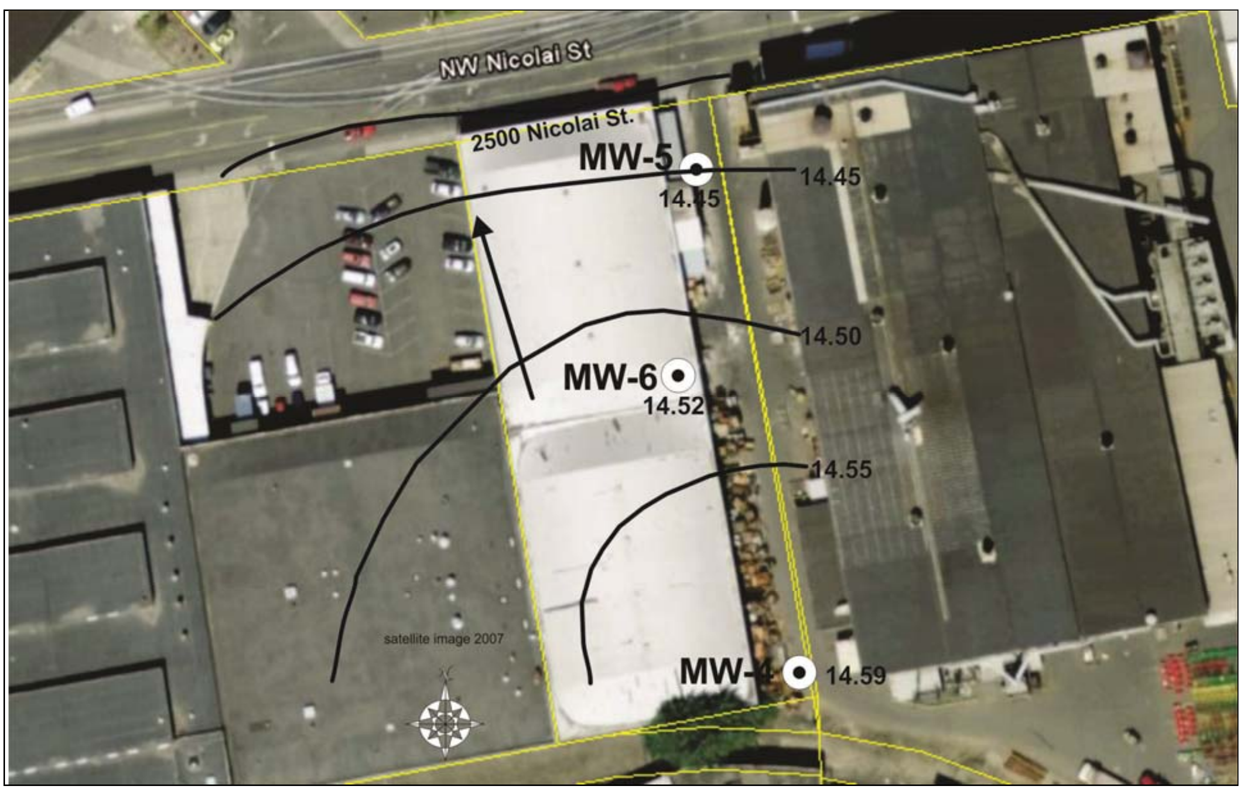


Figure 6 – Groundwater Flow Direction, March 22 and 30, 2010

Appendix
Laboratory Reports

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 2, 2010

Richard Kent
GeoPro, LLC
611 NW 5th Avenue
Battle Ground, WA 98604

Re: Analytical Data for Project 100322-B
Laboratory Reference No. 1003-171

Dear Richard:

Enclosed are the analytical results and associated quality control data for samples submitted on March 24, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

Case Narrative

Samples were collected on March 22, 2010 and received by the laboratory on March 24, 2010. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5-40/50**					
Laboratory ID:	03-171-01					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*74-121*				
Client ID:	**MW-6-45/55**					
Laboratory ID:	03-171-02					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*74-121*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0324W1					
Gasoline	**ND**	100	NWTPH-Gx	3-24-10	3-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*74-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-164-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*93*	*93*	*74-121*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Date Prepared	Date Analyzed	Flags
Lab ID:	03-171-01				
Client ID:	**MW-5-40/50**				
Diesel Range	**ND**	0.25	3-26-10	3-26-10	Y
Lube Oil Range	**ND**	0.40	3-26-10	3-26-10	Y
Surrogate: o-terphenyl	89%	50-150			
Lab ID:	03-171-02				
Client ID:	**MW-6-45/55**				
Diesel Range	**ND**	0.25	3-26-10	3-26-10	Y
Lube Oil Range	**ND**	0.40	3-26-10	3-26-10	Y
Surrogate: o-terphenyl	86%	50-150			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-26-10
Date Analyzed:	3-26-10
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0326W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	86%
Flags:	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: mg/L (ppm)

Lab ID:	03-183-01	03-183-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	82%	82%
Flags:	Y	Y

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-171-01
Client ID: MW-5-40/50

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	3.2		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 03-171-01
Client ID: MW-5-40/50

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	87	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-171-02
Client ID: MW-6-45/55

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B

Lab ID: 03-171-02
Client ID: MW-6-45/55

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	0.22		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	86	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0325W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		1.0
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		1.0
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		2.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		1.0
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0325W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	71-126
Toluene-d8	87	76-116
4-Bromofluorobenzene	84	70-123

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 3-25-10
Date Analyzed: 3-25-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0325W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	10.8	108	10.8	108	70-130	
Benzene	10.0	10.4	104	10.5	105	73-130	
Trichloroethene	10.0	10.2	102	10.0	100	79-122	
Toluene	10.0	10.5	105	10.4	104	80-121	
Chlorobenzene	10.0	9.87	99	9.66	97	83-116	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	0	15	
Benzene	1	14	
Trichloroethene	2	14	
Toluene	1	13	
Chlorobenzene	2	13	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5-40/50**					
Laboratory ID:	03-171-01					
Naphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*47 - 105*				
Pyrene-d10	*83*	*35 - 129*				
Terphenyl-d14	*75*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-6-45/55**					
Laboratory ID:	03-171-02					
Naphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.0094	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*50*	*47 - 105*				
Pyrene-d10	*81*	*35 - 129*				
Terphenyl-d14	*71*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0325W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Fluorene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Anthracene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Pyrene	**ND**	0.10	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Chrysene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	3-25-10	3-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*47 - 105*				
Pyrene-d10	*96*	*35 - 129*				
Terphenyl-d14	*84*	*36 - 106*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0325W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.367**	**0.315**	0.500	0.500	73	63	49 - 101	15	34	
Acenaphthylene	**0.381**	**0.365**	0.500	0.500	76	73	54 - 113	4	27	
Acenaphthene	**0.386**	**0.370**	0.500	0.500	77	74	55 - 101	4	24	
Fluorene	**0.398**	**0.395**	0.500	0.500	80	79	60 - 104	1	20	
Phenanthrene	**0.411**	**0.411**	0.500	0.500	82	82	61 - 99	0	16	
Anthracene	**0.416**	**0.419**	0.500	0.500	83	84	60 - 109	1	16	
Fluoranthene	**0.422**	**0.430**	0.500	0.500	84	86	66 - 111	2	16	
Pyrene	**0.426**	**0.430**	0.500	0.500	85	86	66 - 113	1	17	
Benzo[a]anthracene	**0.421**	**0.421**	0.500	0.500	84	84	56 - 111	0	17	
Chrysene	**0.436**	**0.436**	0.500	0.500	87	87	55 - 102	0	19	
Benzo[b]fluoranthene	**0.427**	**0.434**	0.500	0.500	85	87	60 - 112	2	17	
Benzo[k]fluoranthene	**0.426**	**0.431**	0.500	0.500	85	86	45 - 114	1	21	
Benzo[a]pyrene	**0.411**	**0.418**	0.500	0.500	82	84	52 - 113	2	19	
Indeno(1,2,3-c,d)pyrene	**0.373**	**0.398**	0.500	0.500	75	80	34 - 124	6	21	
Dibenz[a,h]anthracene	**0.349**	**0.386**	0.500	0.500	70	77	26 - 129	10	31	
Benzo[g,h,i]perylene	**0.372**	**0.401**	0.500	0.500	74	80	26 - 127	8	25	
Surrogate:										
2-Fluorobiphenyl					*67*	*61*	*47 - 105*			
Pyrene-d10					*80*	*81*	*35 - 129*			
Terphenyl-d14					*75*	*75*	*36 - 106*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Lab Traveler: 1003-171
Project: 100322-B

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5-40/50**					
Laboratory ID:	03-171-01					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*79*	*39-126*				
Client ID:	**MW-6-45/55**					
Laboratory ID:	03-171-02					
Aroclor 1016	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.047	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*57*	*39-126*				

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Lab Traveler: 1003-171
Project: 100322-B

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0331W1					
Aroclor 1016	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1221	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1232	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1242	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1248	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1254	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Aroclor 1260	**ND**	0.050	EPA 8082	3-31-10	4-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*75*	*39-126*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	03-150-12										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.468**	**0.456**	0.472	0.473	ND	**99**	**96**	60-140	3	20	
Surrogate:											
DCB						*78*	*78*	*39-126*			

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-171-01					
Client ID:	**MW-5-40/50**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**ND**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-171-02					
Client ID:	**MW-6-45/55**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**ND**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**ND**	11	200.8	3-30-10	3-30-10	
Copper	**ND**	11	200.8	3-30-10	3-30-10	
Lead	**ND**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	3-26-10	3-26-10	
Nickel	**ND**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**ND**	56	200.8	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0330W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	56

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 7470A
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0326W1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.50

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	56	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.50	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**108**	98	**119**	108	10	
Arsenic	110	**108**	98	**121**	110	12	
Beryllium	110	**105**	95	**116**	105	10	
Cadmium	110	**107**	97	**118**	107	10	
Chromium	110	**96.7**	88	**108**	98	11	
Copper	110	**104**	94	**114**	104	10	
Lead	110	**106**	96	**118**	107	11	
Nickel	110	**106**	96	**117**	107	10	
Selenium	110	**112**	102	**126**	115	12	
Silver	110	**105**	95	**117**	107	11	
Thallium	110	**106**	96	**115**	105	8	
Zinc	110	**111**	101	**122**	110	9	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL METALS
EPA 7470A
MS/MSD QUALITY CONTROL

Date Extracted: 3-26-10
Date Analyzed: 3-26-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-170-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	12.5	**12.1**	97	**11.7**	94	3	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-5-40/50**					
Laboratory ID:	03-171-01					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	
Client ID:	**MW-6-45/55**					
Laboratory ID:	03-171-02					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Date of Report: April 2, 2010
Samples Submitted: March 24, 2010
Laboratory Reference: 1003-171
Project: 100322-B

TOTAL ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0330W1					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Analyte	Result		PQL	RPD	Limit	Flags
DUPLICATE						
Laboratory ID:	03-170-01					
	Sample	Duplicate				
Total Organic Carbon	**ND**	**ND**	1.0	NA	20	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	Flags
SPIKE BLANK						
Laboratory ID:	SB0330W1					
Total Organic Carbon	**14.5**	12.5	ND	**116**	80-120	
MATRIX SPIKE						
Laboratory ID:	03-170-01					
Total Organic Carbon	**14.1**	12.5	ND	**106**	75-125	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Laboratory Number: 03-171

Company: GeoPro LLC
Project Number: 100322-B
Project Name: Calbag 2500 Groundwater
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/~~BTEX~~	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082 (~~[illegible]~~)	Pesticides by 8081A	Herbicides by 8151A	Total ~~RCRA~~ Metals (8) PP	TCLP Metals DIS PP	HEM by 1664	TOC						% Moisture
1	MW-5-40/50	3/22/10	1441	W	16		X	X	X			X	X	~~X~~		X	~~X~~	~~X~~	X						
2	MW-6-45/55	3/22/10	1605	W	16		X	X	X			X	X	~~X~~ NO QC		X	~~X~~ NO QC	~~X~~ NO QC	X						
3	TB	—	—	↓	1																				

	Signature	Company	Date	Time
Relinquished by	[signature]	GeoPro LLC	3/23/10	1700
Received by	[signature]	OSE	3/24/10	1000
Relinquished by				
Received by				
Relinquished by				
Received by				

Reviewed by/Date

Reviewed by/Date

Comments/Special Instructions:

Chromatograms with final report ☐

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April 6, 2010

Richard Kent
GeoPro, LLC
611 NW 5th Avenue
Battle Ground, WA 98604

Re: Analytical Data for Project 100322-B
Laboratory Reference No. 1003-204

Dear Richard:

Enclosed are the analytical results and associated quality control data for samples submitted on March 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

Case Narrative

Samples were collected on March 23 & 26, 2010 and received by the laboratory on March 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Date Prepared	Date Analyzed	Flags
Lab ID:	03-204-01				
Client ID:	**MW-4-39.5/49.5**				
Diesel Range	**ND**	0.25	4-1-10	4-1-10	Y
Lube Oil Range	**ND**	0.40	4-1-10	4-1-10	Y
Surrogate: o-terphenyl	76%	50-150			

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-1-10
Date Analyzed:	4-1-10
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0401W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	69%
Flags:	Y

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 4-1-10
Date Analyzed: 4-1-10

Matrix: Water
Units: mg/L (ppm)

Lab ID:	03-208-01	03-208-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	74%	75%
Flags:	Y	Y

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-204-01					
Client ID:	**MW-4-39.5/49.5**					
Antimony	**ND**	5.6	200.8	3-30-10	3-30-10	
Arsenic	**6.2**	3.3	200.8	3-30-10	3-30-10	
Beryllium	**ND**	11	200.8	3-30-10	4-1-10	
Cadmium	**ND**	4.4	200.8	3-30-10	3-30-10	
Chromium	**24**	11	200.8	3-30-10	3-30-10	
Copper	**28**	11	200.8	3-30-10	3-30-10	
Lead	**9.7**	1.1	200.8	3-30-10	4-1-10	
Mercury	**ND**	0.50	7470A	4-1-10	4-1-10	
Nickel	**25**	22	200.8	3-30-10	3-30-10	
Selenium	**ND**	5.6	200.8	3-30-10	3-30-10	
Silver	**ND**	11	200.8	3-30-10	3-30-10	
Thallium	**ND**	5.6	200.8	3-30-10	3-30-10	
Zinc	**160**	56	200.8	3-30-10	3-30-10	

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0330W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	56

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 7470A
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-1-10
Date Analyzed: 4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0401W1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.50

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Nickel	**ND**	**ND**	NA	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	56	

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-1-10
Date Analyzed: 4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-191-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.50	

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-30-10
Date Analyzed: 3-30&4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-150-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	110	**108**	98	**119**	108	10	
Arsenic	110	**108**	98	**121**	110	12	
Beryllium	110	**105**	95	**116**	105	10	
Cadmium	110	**107**	97	**118**	107	10	
Chromium	110	**96.7**	88	**108**	98	11	
Copper	110	**104**	94	**114**	104	10	
Lead	110	**106**	96	**118**	107	11	
Nickel	110	**106**	96	**117**	107	10	
Selenium	110	**112**	102	**126**	115	12	
Silver	110	**105**	95	**117**	107	11	
Thallium	110	**106**	96	**115**	105	8	
Zinc	110	**111**	101	**122**	110	9	

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL METALS
EPA 7470A
MS/MSD QUALITY CONTROL

Date Extracted: 4-1-10
Date Analyzed: 4-1-10

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-191-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	12.5	**10.5**	84	**11.6**	93	10	

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-39.5/49.5**					
Laboratory ID:	03-204-01					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Date of Report: April 6, 2010
Samples Submitted: March 27, 2010
Laboratory Reference: 1003-204
Project: 100322-B

TOTAL ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0330W1					
Total Organic Carbon	**ND**	1.0	SM 5310 B	3-30-10	3-30-10	

Analyte	Result		PQL	RPD	Limit	Flags
DUPLICATE						
Laboratory ID:	03-170-01					
	Sample	Duplicate				
Total Organic Carbon	**ND**	**ND**	1.0	NA	20	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	Flags
SPIKE BLANK						
Laboratory ID:	SB0330W1					
Total Organic Carbon	**14.5**	12.5	ND	**116**	80-120	
MATRIX SPIKE						
Laboratory ID:	03-170-01					
Total Organic Carbon	**14.1**	12.5	ND	**106**	75-125	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Laboratory Number: 03-204

Company: GeoPro LLC
Project Number: 100322-B
Project Name: Calbag 2500 Groundwater
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total ~~RCRA~~ Metals (8) PP	TCLP Metals	HEM by 1664	TOC						% Moisture
1	MW-4-39.5/49.5	3/23/10	1315	W	4			X								X			X						
2	MW-4-39.5/49.5	3/26/10	1200	W	1 VOA																				

	Signature	Company	Date	Time
Relinquished by		GeoPro LLC	3/26/10	1300
Received by		OnSite Env.	3/27/10	1000
Relinquished by				
Received by				
Relinquished by				
Received by				

Reviewed by/Date

Reviewed by/Date

Comments/Special Instructions:
3 empty inc.
lack of water to obtain 1 liter, unpres for PCB analysis

Chromatograms with final report ☐

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Environmental Inc.

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April 9, 2010

Richard Kent
GeoPro, LLC
611 NW 5th Avenue
Battle Ground, WA 98604

Re: Analytical Data for Project 100322-B
Laboratory Reference No. 1004-004

Dear Richard:

Enclosed are the analytical results and associated quality control data for samples submitted on April 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

Case Narrative

Samples were collected on March 30, 2010 and received by the laboratory on April 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Date Prepared	Date Analyzed	Flags
Lab ID:	03-204-01				
Client ID:	**MW-4-39.5/49.5**				
Diesel Range	**ND**	0.25	4-1-10	4-1-10	Y
Lube Oil Range	**ND**	0.40	4-1-10	4-1-10	Y
Surrogate: o-terphenyl	76%	50-150			

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-1-10
Date Analyzed:	4-1-10
Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB0401W1
Diesel Range:	**ND**
PQL:	0.25
Identification:	---
Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---
Surrogate Recovery	
o-Terphenyl:	69%
Flags:	Y

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 4-1-10
Date Analyzed: 4-1-10

Matrix: Water
Units: mg/L (ppm)

Lab ID:	03-218-01	03-218-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	74%	75%
Flags:	Y	Y

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

PAHs by EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-39.5/49.5**					
Laboratory ID:	04-004-01					
Naphthalene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
2-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
1-Methylnaphthalene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Acenaphthylene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Acenaphthene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Fluorene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Phenanthrene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Anthracene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Fluoranthene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Pyrene	**ND**	0.095	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[a]anthracene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Chrysene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[k]fluoranthene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[g,h,i]perylene	**ND**	0.0095	EPA 8270/SIM	4-2-10	4-2-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*73*	*47 - 105*				
Pyrene-d10	*93*	*35 - 129*				
Terphenyl-d14	*87*	*36 - 106*				

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0402W1					
Naphthalene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
2-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
1-Methylnaphthalene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Acenaphthylene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Acenaphthene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Fluorene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Phenanthrene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Anthracene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Fluoranthene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Pyrene	**ND**	0.10	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Chrysene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	4-2-10	4-2-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*95*	*47 - 105*				
Pyrene-d10	*109*	*35 - 129*				
Terphenyl-d14	*100*	*36 - 106*				

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Laboratory Reference: 1004-004
Project: 100322-B

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0402W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.342**	**0.304**	0.500	0.500	68	61	49 - 101	12	34	
Acenaphthylene	**0.367**	**0.372**	0.500	0.500	73	74	54 - 113	1	27	
Acenaphthene	**0.362**	**0.349**	0.500	0.500	72	70	55 - 101	4	24	
Fluorene	**0.397**	**0.390**	0.500	0.500	79	78	60 - 104	2	20	
Phenanthrene	**0.417**	**0.412**	0.500	0.500	83	82	61 - 99	1	16	
Anthracene	**0.437**	**0.437**	0.500	0.500	87	87	60 - 109	0	16	
Fluoranthene	**0.475**	**0.474**	0.500	0.500	95	95	66 - 111	0	16	
Pyrene	**0.473**	**0.476**	0.500	0.500	95	95	66 - 113	1	17	
Benzo[a]anthracene	**0.408**	**0.416**	0.500	0.500	82	83	56 - 111	2	17	
Chrysene	**0.428**	**0.436**	0.500	0.500	86	87	55 - 102	2	19	
Benzo[b]fluoranthene	**0.440**	**0.454**	0.500	0.500	88	91	60 - 112	3	17	
Benzo[k]fluoranthene	**0.449**	**0.456**	0.500	0.500	90	91	45 - 114	2	21	
Benzo[a]pyrene	**0.451**	**0.461**	0.500	0.500	90	92	52 - 113	2	19	
Indeno(1,2,3-c,d)pyrene	**0.463**	**0.475**	0.500	0.500	93	95	34 - 124	3	21	
Dibenz[a,h]anthracene	**0.462**	**0.471**	0.500	0.500	92	94	26 - 129	2	31	
Benzo[g,h,i]perylene	**0.457**	**0.465**	0.500	0.500	91	93	26 - 127	2	25	
Surrogate:										
2-Fluorobiphenyl					*69*	*63*	*47 - 105*			
Pyrene-d10					*94*	*93*	*35 - 129*			
Terphenyl-d14					*85*	*85*	*36 - 106*			

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Lab Traveler: 1004-004
Project: 100322-B

PCBs by EPA 8082

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-4-39.5/49.5**					
Laboratory ID:	04-004-01					
Aroclor 1016	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Aroclor 1221	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Aroclor 1232	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Aroclor 1242	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Aroclor 1248	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Aroclor 1254	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Aroclor 1260	**ND**	0.047	EPA 8082	4-2-10	4-5-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*104*	*39-126*				

Date of Report: April 9, 2010
Samples Submitted: April 1, 2010
Lab Traveler: 1004-004
Project: 100322-B

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0402W1					
Aroclor 1016	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Aroclor 1221	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Aroclor 1232	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Aroclor 1242	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Aroclor 1248	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Aroclor 1254	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Aroclor 1260	**ND**	0.050	EPA 8082	4-2-10	4-5-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*92*	*39-126*				

SPIKE BLANKS

Laboratory ID:	SB0402W1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.439**	**0.422**	0.500	0.500	N/A	**88**	**84**	49-113	4	14	
Surrogate:											
DCB						*101*	*96*	*39-126*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GeoPro LLC
Project Number: 100322-B
Project Name: Calbag 2500 Groundwater
Project Manager: Richard Kent
Sampled by: Richard Kent

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [x] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 04-004

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	MW-4-39.5/49.5	3/30/10	1340	W	6			X				X	X												

	Signature	Company	Date	Time
Relinquished by	[signature]	GeoPro LLC	3/31/10	1500
Received by	[signature]	OSE	4/1/10	1000
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

VOA's included as backup. Do not analyze if previous shipped VOAs analyzed.

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

Appendix C
Groundwater Monitoring Logs
MW-1, MW-2, MW-3

Oregon Water Resources Department

MULT 97729

MULT 97729

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

WELL LABEL # L 88327

START CARD # 200557

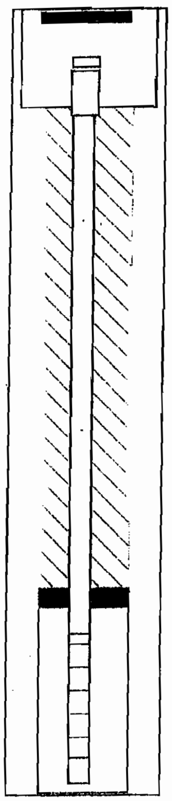
(1) LAND OWNER Owner Well I.D. MW-1

First Name Jeffrey Last Name Wolfstone
Company Shaker Square
Address 2495 Nicolai
City Portland State ORE Zip 97296-0067

(2) TYPE OF WORK [X] New [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD
[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Hollow Stem Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) CONSTRUCTION Piezometer Well [ ]
Depth of Completed Well 50 ft. Special Standard [ ]



MONUMENT/VAULT Below Ground
From 0 To 1'

BORE HOLE
Diameter 6" From 0 To 50

CASING
Dia. 2" From [ ] 2" To 40'
Gauge 40 Wld Thrd
Material ( ) Steel (X) Plastic [ ] [X]

LINER
Dia. N/A From [ ] To
Gauge Wld Thrd
Material ( ) Steel ( ) Plastic [ ] [ ]

SEAL
From 1 To 38
Material 3/8 Bent Chip
Amount 450 lbs Grout weight

SCREEN
Casing/Liner Material PVC
Diameter 2" From 40 To 50
Slot Size 010

FILTER
From 38 To 50 Material Sand Size of pack 10/20

(5) WELL TESTS
( ) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature 56 °F Lab analysis [ ] Yes By
Supervising Geologist/Engineer Rick Kent
Water quality concerns? [ ] Yes (describe below)

From	To	Description	Amount	Units

(6) LOCATION OF WELL (legal description)
County Multnomah Twp 1 N Range 1 E WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 100
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
( ) Street address of well ( ) Nearest address

2495 NW Nicolai

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			[ ]	
Completed Well	11-1-08		[ ]	42

Flowing Artesian? [ ] Dry Hole? [ ]
WATER BEARING ZONES Depth water was first found 42

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
					[ ]	
					[ ]	
					[ ]	
					[ ]	
					[ ]	

(8) WELL LOG Ground Elevation

Material	From	To
Concrete	0	6"
Silty Sand	6"	40
Sand + Gravel	40	48
Sand	48	50

RECEIVED
DEC 19 2008
WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED
FEB 09 2009
WATER RESOURCES DEPT
SALEM, OREGON

Date Started 11-1-08 Completed 11-1-08

(unbonded) Monitor Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
License Number 10516 Date 12-9-08
Password : (if filing electronically)
Signed [signature]

(bonded) Monitor Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon monitoring well construction standards. This report is true to the best of my knowledge and belief.
License Number 10054 Date 12-10-08
Password : (if filing electronically)
Signed [signature]
Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT
THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

MULT 97730

MULT 97730

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

WELL LABEL # L 98328
START CARD # 200532

(1) LAND OWNER

Owner Well I.D. MW-2

First Name Jeffrey Last Name Wolfstone
Company Shaker Square LLC
Address 2495 Nicolai
City Portland State ORE Zip 97296-0067

(2) TYPE OF WORK

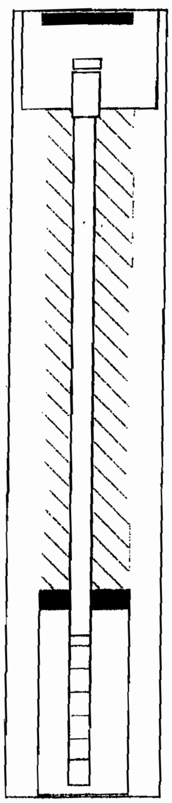
[X] New [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Hollow Stem Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) CONSTRUCTION

Piezometer Well [ ]
Depth of Completed Well 50 ft. Special Standard [ ]



MONUMENT/VAULT Below Ground
From 0 To 1

BORE HOLE
Diameter 6" From 0 To 50

CASING
Dia. 2" From [ ] 2" To 40'
Gauge 40 Wld Thrd
Material ( ) Steel (X) Plastic [ ] [X]

LINER
Dia. N/A From [ ] To
Gauge Wld Thrd
Material ( ) Steel ( ) Plastic [ ] [ ]

SEAL
From 1 To 38
Material 3/8 Bent Chip
Amount 450 lbs Grout weight

SCREEN
Casing/Liner Material PVC
Diameter 2" From 40' To 50'
Slot Size 010

FILTER
From 38 To 50 Material Sand Size of pack 10/20

(5) WELL TESTS

( ) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature 56 °F Lab analysis [ ] Yes By
Supervising Geologist/Engineer Rick Kent
Water quality concerns? [ ] Yes (describe below)

From	To	Description	Amount	Units

(6) LOCATION OF WELL (legal description)

County Multnomah Twp 1 (N)/S Range 1 (E)/W WM
Sec 29 SE 1/4 of the NE Tax Lot 100
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
Street address of well ( ) Nearest address
2495 NW Nicolai

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening				
Completed Well	10-31-08		-	44'

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 44'

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(8) WELL LOG

Ground Elevation

Material	From	To
Asphalt	0	5"
Silty Sand	5"	40'
Sand	40'	50'

RECEIVED
FEB 09 2009
WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED
DEC 19 2008
WATER RESOURCES DEPT
SALEM, OREGON

Date Started 10-31-08 Completed 10-31-08

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 10516 Date 12-9-08
Password : (if filing electronically)
Signed

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10054 Date 12-10-08
Password : (if filing electronically)
Signed
Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT
THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

MULT 97731 ✓

MULT 97731

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

WELL LABEL # L 88329

START CARD # 198595

(1) LAND OWNER

Owner Well I.D. MW-3

First Name Jeffrey Last Name Wolfstone

Company Shaker Square

Address 2495 Nicolai

City Portland State ORE Zip 97296-1067

(2) TYPE OF WORK

[X] New [ ] Deepening [ ] Conversion [ ] Alteration (repair/recondition) [ ] Abandonment

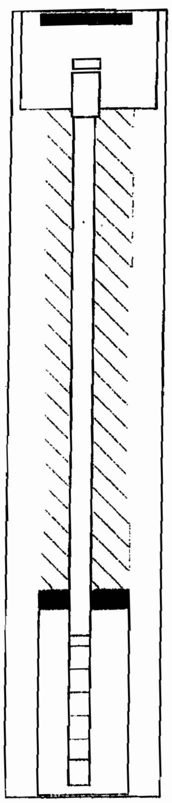
(3) DRILL METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Hollow Stem Auger [ ] Cable Mud [ ] Reverse Rotary [ ] Other

(4) CONSTRUCTION

Piezometer Well [ ] Special Standard [ ]

Depth of Completed Well 55 ft.



MONUMENT/VAULT Below Ground
From 0 To 1

BORE HOLE
Diameter 6" From 0 To 55'

CASING
Dia. 2" From [ ] 2" To 45'
Gauge 40 Wld Thrd
Material ( ) Steel (X) Plastic [ ] [X]

LINER
Dia. N/A From [ ] To
Gauge Wld Thrd
Material ( ) Steel ( ) Plastic [ ] [ ]

SEAL
From 1 To 43
Material 3/8 Bent Chip
Amount 500lbs Grout weight

SCREEN
Casing/Liner Material PVC
Diameter 2" From 45 To 55
Slot Size 010

FILTER
From 43 To 55 Material Sand Size of pack 10/20

(5) WELL TESTS

( ) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature 56 °F Lab analysis [ ] Yes By

Supervising Geologist/Engineer Rick Kent

Water quality concerns? [ ] Yes (describe below)

From	To	Description	Amount	Units

(6) LOCATION OF WELL (legal description)

County Multnomah Twp 1 (N) Range 1 (E/W) WM

Sec 29 SE 1/4 of the NE 1/4 Tax Lot 100

Tax Map Number Lot

Lat ° ' " or DMS or DD

Long ° ' " or DMS or DD

( ) Street address of well ( ) Nearest address

2495 NW Nicolai

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening				
Completed Well	11-1-08			47'

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 47

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(8) WELL LOG

Ground Elevation

Material	From	To
Asphalt	0	5"
Silty Sand	5"	45'
Sand + Gravel	45'	53'
Sand	53'	55'

RECEIVED
DEC 1 9 2008
WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED
FEB 09 2009
WATER RESOURCES DEPT
SALEM, OREGON

Date Started 11-1-08 Completed 11-1-08

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 10516 Date 12-9-08

Password : (if filing electronically)

Signed

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10054 Date 12-10-08

Password : (if filing electronically)

Signed [signature]

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Appendix D
Regional Water Wells

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
B2	USGS3243508	1/4 - 1/2 Mile East
D11	USGS3243516	1/2 - 1 Mile NNW
E13	USGS3243515	1/2 - 1 Mile NW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

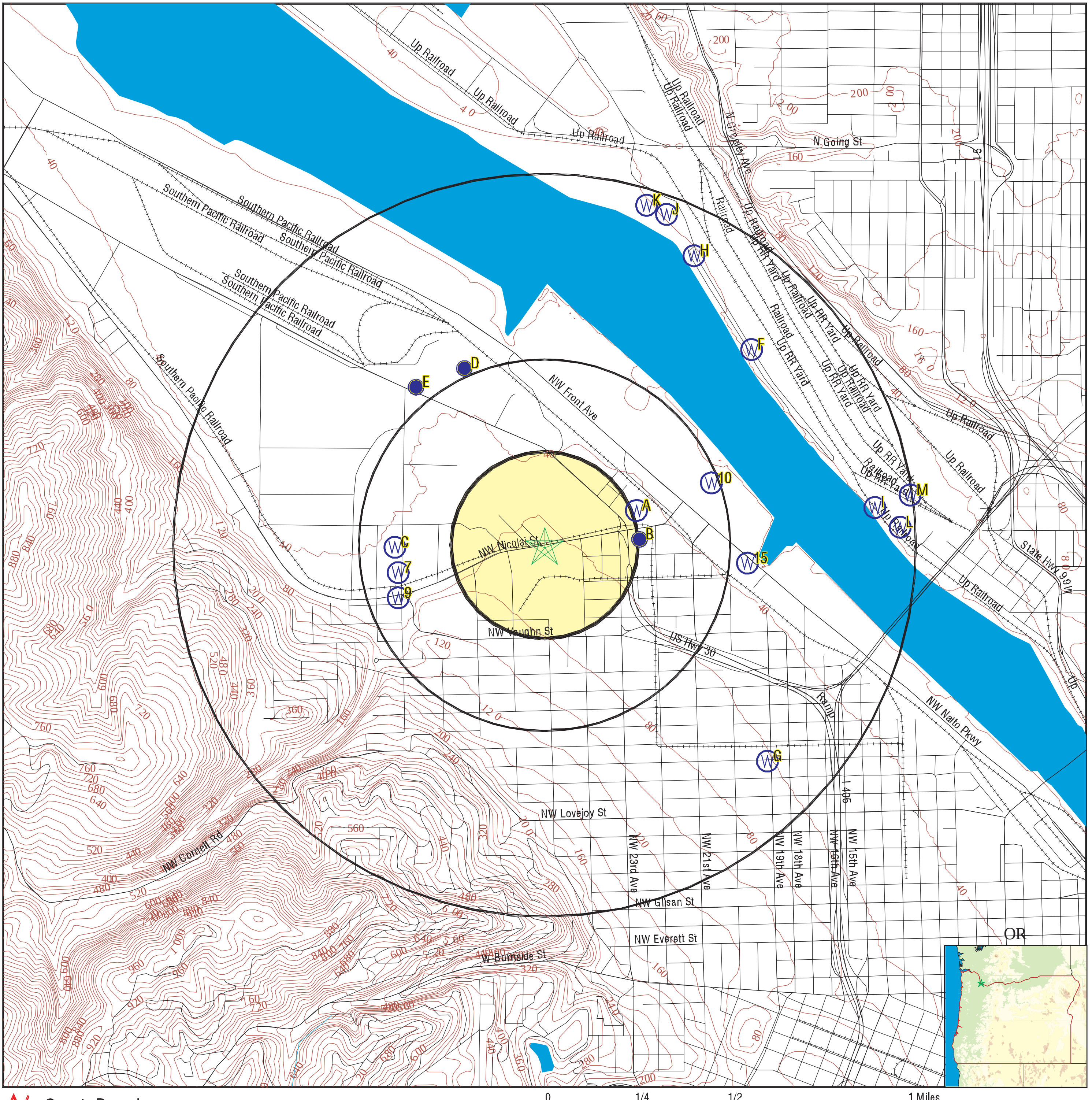
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	ORI200000008652	1/4 - 1/2 Mile ENE
B3	ORW200000008722	1/4 - 1/2 Mile East
A4	ORI200000008659	1/4 - 1/2 Mile ENE
A5	ORI200000008658	1/4 - 1/2 Mile ENE
C6	ORI200000008628	1/4 - 1/2 Mile West
7	ORI200000008622	1/4 - 1/2 Mile West
C8	ORI200000008624	1/4 - 1/2 Mile West
9	ORW200000008705	1/4 - 1/2 Mile WSW
10	ORI200000008671	1/4 - 1/2 Mile ENE
D12	ORW200000008740	1/2 - 1 Mile NNW
E14	ORW200000008738	1/2 - 1 Mile NW
15	ORI200000008623	1/2 - 1 Mile East
F16	ORI200000008683	1/2 - 1 Mile NE
F17	ORI200000008684	1/2 - 1 Mile NE
F18	ORI200000008685	1/2 - 1 Mile NE
G19	ORI200000008597	1/2 - 1 Mile SE
G20	ORI200000008598	1/2 - 1 Mile SE
G21	ORI200000008595	1/2 - 1 Mile SE

PHYSICAL SETTING SOURCE MAP - 2177343.2s



County Boundary

Major Roads

Contour Lines

Earthquake epicenter, Richter 5 or greater

Water Wells

Public Water Supply Wells

Cluster of Multiple Icons

Groundwater Flow Direction

GI Indeterminate Groundwater Flow at Location

GV Groundwater Flow Varies at Location

Map ID Direction Distance Elevation		Database	EDR ID Number
A1 **ENE** **1/4 - 1/2 Mile** **Lower**		**OR WELLS**	**ORI200000008652**

Inspection:	33601		
Inspecti 1:	08/25/2003 00:00:00		
Startcard :	156640		
Wl county :	Not Reported	Wl nbr:	Not Reported
Well tag n:	58976		
License nb:	10011		
County cod:	MULT		
Tax lot:	900		
Township:	1		
Township c:	N		
Range:	1		
Range char:	E		
Sctn:	28		
Qtr40:	SW	Qtr160:	NW
Latitude d:	45.54161		
Longitude :	-122.69827		
Gps horizo:	33		
Name owner:	REARDEN, DON; IMPERIAL PAINT 2526 NW YEON, PORTLAND		
Year const:	2003		
Deficienci:	N	Type of wo:	N
Previous i:	N	Inspected :	DIP
Wm region:	NW		
Well tag a:	BANDED TO CEMENT		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	Not Reported		
Remarks:	FLUSH, 1.5" CASING, TEST WELL CAP WITH LOCK		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	Not Reported
Pictures t:	Not Reported		
Street of :	Not Reported		
Last updt :	01/01/2000 00:00:00	Last updt1:	pedersdi
Site id:	ORI200000008652		

B2 **East** **1/4 - 1/2 Mile** **Lower**		**FED USGS**	**USGS3243508**

Agency cd:	USGS	Site no:	453227122414801
Site name:	01N/01E-28CAB1		
Latitude:	453227		
Longitude:	1224148	Dec lat:	45.54067335
Dec lon:	-122.69787458	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	41
State:	41	County:	051
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported

Altitude:	32.		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	Not Reported		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower Willamette. Oregon. Area = 407 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19460801
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	395.	Hole depth:	395.
Source of depth data:	driller		
Project number:	4741-14300		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-08-01	Ground water data end date:	1946-08-27
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1946-08-27	32.0		1946-08-01	32.0	

B3
East
1/4 - 1/2 Mile
Lower

OR WELLS **ORW200000008722**

Logid:	MULT 1013	Lstupdate:	Not Reported
Establby:	KARL WOZNIAK	Xysource:	UNKNOWN
Horizerr:	9999	Sourceorg:	USGS
Sourceowrd:	WILLGW	Sownum:	0
Obswell:	9	Recwell:	9
Lsdelev:	32		
Obsflag:	Not Reported		
Wetagfield:	0		
X coord:	749212.25841		
Y coord:	1389307.755		
Site id:	ORW200000008722		

A4
ENE
1/4 - 1/2 Mile
Lower

OR WELLS **ORI200000008659**

Inspection:	33603		
Inspecti 1:	08/25/2003 00:00:00		
Startcard :	156643		
Wl county :	Not Reported	Wl nbr:	Not Reported
Well tag n:	58979		
License nb:	10011		
County cod:	MULT		
Tax lot:	900		
Township:	1		
Township c:	N		

Range:	1		
Range char:	E		
Sctn:	28		
Qtr40:	SW	Qtr160:	NW
Latitude d:	45.5419		
Longitude :	-122.69798		
Gps horizo:	64		
Name owner:	REARDEN, DON; IMPERIAL PAINT 2526 NW YEON, PORTLAND		
Year const:	2003		
Deficienci:	N	Type of wo:	N
Previous i:	N	Inspected :	DIP
Wm region:	NW		
Well tag a:	BANDED TO CEMENT		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	Not Reported		
Remarks:	FLUSH, 1.5" CASING, TEST WELL CAP WITH LOCK		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	Not Reported
Pictures t:	Not Reported		
Street of :	Not Reported		
Last updt :	01/01/2000 00:00:00	Last updt1:	pedersdi
Site id:	ORI200000008659		

A5
ENE
1/4 - 1/2 Mile
Lower

OR WELLS ORI200000008658

Inspection:	33602		
Inspecti 1:	08/25/2003 00:00:00		
Startcard :	156641		
Wl county :	Not Reported	Wl nbr:	Not Reported
Well tag n:	58977		
License nb:	10011		
County cod:	MULT		
Tax lot:	900		
Township:	1		
Township c:	N		
Range:	1		
Range char:	E		
Sctn:	28		
Qtr40:	SW	Qtr160:	NW
Latitude d:	45.54187		
Longitude :	-122.69788		
Gps horizo:	19		
Name owner:	REARDEN, DON; IMPERIAL PAINT 2526 NW YEON, PORTLAND		
Year const:	2003		
Deficienci:	N	Type of wo:	N
Previous i:	N	Inspected :	DIP
Wm region:	NW		
Well tag a:	BANDED TO CEMENT		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	Not Reported		
Remarks:	FLUSH, 1.5" CASING, TEST WELL CAP WITH LOCK		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	Not Reported
Pictures t:	Not Reported		

Street of :	Not Reported		
Last updt :	01/01/2000 00:00:00	Last updt1:	pedersdi
Site id:	ORI200000008658		

C6
West
1/4 - 1/2 Mile
Lower

OR WELLS ORI200000008628

Inspection:	38959		
Inspecti 1:	07/22/2005 00:00:00		
Startcard :	174190		
Wl county :	MULT	Wl nbr:	78650
Well tag n:	77142		
License nb:	10011		
County cod:	MULT		
Tax lot:	2200		
Township:	1		
Township c:	N		
Range:	1		
Range char:	E		
Sctn:	29		
Qtr40:	SE	Qtr160:	NW
Latitude d:	45.54053		
Longitude :	-122.71118		
Gps horizo:	23		
Name owner:	GALVANIZERS CO.		
Year const:	2005		
Deficienci:	N	Type of wo:	N
Previous i:	N	Inspected :	JWJ
Wm region:	NW		
Well tag a:	ZIP TIE IN CEMENT		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	AT REST		
Remarks:	Not Reported		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	SP
Pictures t:	N		
Street of :	2406 NW 30TH AVE		
Last updt :	09/12/2005 00:00:00	Last updt1:	jefferjw
Site id:	ORI200000008628		

7
West
1/4 - 1/2 Mile
Lower

OR WELLS ORI200000008622

Inspection:	38958		
Inspecti 1:	07/21/2005 00:00:00		
Startcard :	174188		
Wl county :	MULT	Wl nbr:	78647
Well tag n:	0		
License nb:	10011		
County cod:	MULT		
Tax lot:	2200		
Township:	1		
Township c:	N		

Range:	1		
Range char:	E		
Sctn:	29		
Qtr40:	SE	Qtr160:	NW
Latitude d:	45.53937		
Longitude :	-122.71127		
Gps horizo:	20		
Name owner:	GALVANIZERS CO.		
Year const:	2005		
Deficienci:	U	Type of wo:	N
Previous i:	N	Inspected :	JWJ
Wm region:	NW		
Well tag a:	ZIP TIE IN CEMENT		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	AT REST		
Remarks:	Not Reported		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	JP
Pictures t:	N		
Street of :	2406 NW 30TH AVE		
Last updt :	09/12/2005 00:00:00	Last updt1:	jefferjw
Site id:	ORI200000008622		

C8
West
1/4 - 1/2 Mile
Lower

OR WELLS ORI200000008624

Inspection:	38957		
Inspecti 1:	07/22/2005 00:00:00		
Startcard :	174189		
Wl county :	MULT	Wl nbr:	78649
Well tag n:	77141		
License nb:	10011		
County cod:	MULT		
Tax lot:	2200		
Township:	1		
Township c:	N		
Range:	1		
Range char:	E		
Sctn:	29		
Qtr40:	SE	Qtr160:	NW
Latitude d:	45.54019		
Longitude :	-122.71173		
Gps horizo:	12		
Name owner:	GALVANIZERS CO.		
Year const:	2005		
Deficienci:	U	Type of wo:	N
Previous i:	N	Inspected :	JWJ
Wm region:	NW		
Well tag a:	ZIP TIE IN CEMENT		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	AT REST		
Remarks:	Not Reported		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	JP
Pictures t:	N		

Street of :	2406 NW 30TH AVE		
Last updt :	09/12/2005 00:00:00	Last updt1:	jefferjw
Site id:	ORI200000008624		

9
WSW
1/4 - 1/2 Mile
Lower

OR WELLS **ORW200000008705**

Logid:	ODOT 1	Lstupdate:	09/26/2005
Establby:	KARL WOZNIAK	Xysource:	7.5-MINUTE MAP
Horizerr:	50	Sourceorg:	M BEESON
Sourceowrd:	GWATER	Sownum:	0
Obswell:	Not Reported	Recwell:	Not Reported
Lsdelev:	0		
Obsflag:	Not Reported		
Wetagfield:	0		
X coord:	745758.48211		
Y coord:	1388566.99679		
Site id:	ORW200000008705		

10
ENE
1/4 - 1/2 Mile
Lower

OR WELLS **ORI200000008671**

Inspection:	28345		
Inspecti 1:	05/09/2002 00:00:00		
Startcard :	149609		
Wl county :	Not Reported	Wl nbr:	Not Reported
Well tag n:	56000		
License nb:	10011		
County cod:	MULT		
Tax lot:	0		
Township:	1		
Township c:	N		
Range:	1		
Range char:	E		
Sctn:	28		
Qtr40:	Not Reported	Qtr160:	NW
Latitude d:	45.54287		
Longitude :	-122.69388		
Gps horizo:	Not Reported		
Name owner:	CITY OF PORTLAND; NW FRONT AVE AND NW NICOLAI ST, PORTLAND; SEE MAP		
Year const:	2002		
Deficienci:	N	Type of wo:	N
Previous i:	Y	Inspected :	KRB
Wm region:	NW		
Well tag a:	BANDED		
Depth:	Not Reported	Static wat:	Not Reported
Status of :	Not Reported		
Remarks:	Not Reported		
Variance:	N	Blank1:	Not Reported
Blank2:	Not Reported	Site visit:	Y
Type of ho:	M	Casing cap:	Not Reported
Pictures t:	Not Reported		

Appendix N
DEQ No Further Action Determination Letter
2495 NW Nicolai Street, May 30, 2013

Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Northwest Region
2020 SW 4th Avenue, # 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-5471
TTY 711

February 12, 2014

Jeffery Wolfstone
601 SW Second Ave., Suite 2100
Portland, Oregon 97204

RE: No Further Action Determination Revision
Calbag Metals
2495 NW Nicolai Street, Portland, OR
ECSI# 5059

Dear Mr. Wolfstone:

The Department of Environmental Quality (DEQ) revised the May 2013 No Further Action (NFA) determination for your site because of comments received from the City of Portland. The NFA was amended with additional information regarding the site location description and clarification that the stormwater pathway source control evaluation was ongoing toward a separate source control decision. DEQs response to City of Portland comments is attached to this letter and the amended NFA details are found below.

DEQ has completed a review of all submitted information related to the property located at 2495 NW Nicolai Street in Portland, Oregon. The site consists of Tax Lots 100, 1500, 1600, 1700, 1800, 1900, and 2000 in Section 29, Township 1 North, Range 1 East (Willamette Baseline and Meridian)2495 NW Nicolai Street in Portland (ECSI #5059). Calbag Metals also operates on Tax Lot 700 that is leased from the City of Portland and is part of the Guilds Lake remediation area under ECSI #404. Tax Lot 700 is not part of this NFA evaluation since it was part of a separate cleanup decision with the City of Portland in June of 1995.

DEQ review of site-related documents was completed under an Independent Cleanup Pathway agreement signed in August 2009.

DEQ has determined that No Further Action (NFA) is required to address environmental contamination at the Calbag Metals property. This determination is based on the regulations and facts as we now understand them, including but not limited to the following:

1. From 2008 to 2013, site characterizations were performed to determine if soil and groundwater contain significant environmental contamination. Twenty-five soil samples were collected for laboratory analysis from six soil boring and three monitoring well locations. Groundwater was sampled on two occasions from three monitoring wells (November 2008 and March 2010).
2. Constituents detected in soil samples included metals, volatile and semi-volatile organic compounds, and polychlorinated biphenyls (PCBs). All detected concentrations were below applicable standards.
3. The Source Control Evaluation (SCE) investigation sampled asphalt paving material inside the warehouse and in the alley for PCB analysis. PCBs were detected in surficial paving materials at levels below Risk-Based Concentrations (RBCs) but above Portland Harbor Screening Level Values

(SLVs). Repaving of the impacted areas within the warehouse and in the alley was performed to prevent PCBs eroding from paving materials to the stormwater system. In addition, two stormwater treatment systems were installed to remove PCBs and other site stormwater contamination.

4. Groundwater samples did not contain contaminants at concentrations above DEQ RBCs, for occupational exposure, with the exception of chloroform. Because of the minor nature of the chloroform exceedences and the unlikely use of site groundwater for human consumption, the detections were not considered significant.
5. The basis for DEQ's NFA determination for the site was outlined in a closure memorandum for the site dated February 2014 and approved by DEQ's NWR Cleanup Section manager. Because no remedial action was completed at the site, public notice of DEQ's NFA determination is not necessary.

DEQ concludes that based on the information presented to date, no further action is required at the Calbag Metals Site by current or future owners under Oregon Environmental Cleanup Law, ORS 465.200 et seq., unless new or previously undisclosed information becomes available, and provided that future activities by site owners/operators neither contribute to or exacerbate existing contamination. We will update our Environmental Cleanup Site Information System database to reflect this decision.

A Portland Harbor Superfund study area source control evaluation for the stormwater contaminant transport pathway to the Willamette River is currently underway, in accordance with the 2005 EPA/DEQ Joint Source Control Strategy. Stormwater from the site represents the only complete pathway to the river and is not included in this NFA determination. DEQ anticipations completion of the source control process in early 2014, at which time DEQ will issue a separate source control decision on the stormwater pathway.

If you have any questions about this letter, please contact me at (503) 229-6431.

Sincerely,

Keith Johnson

Keith Johnson, Manager
NWR Cleanup Section

Attachments: DEQ Response to City of Portland Comments, February 2014

cc: Jim Orr, DEQ NWR
Dan Hafley, DEQ NWR
Alex Liverman, DEQ NWR
Kevin Loftus, Nicolai LLC
Peter Trabusiner, Blue Mountain Environmental Consulting Inc.
Richard Kent, GeoPro Geologic Services LLC
Linda Scheffler, City of Portland
Kim Cox, City of Portland
Kristine Koch, EPA
Richard Muza, EPA
ECSI File# 5059

Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Northwest Region
2020 SW 4th Avenue, # 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-5471
TTY 711

February 12, 2014

Kim Cox
Environmental Policy Manager
Bureau of Environmental Services
1120 SW Fifth Ave., Room 1000
Portland, Oregon 97204

RE: Response to City of Portland Comments
No Further Action Determination
Calbag Metals
2495 NW Nicolai Street, Portland, OR
ECSI# 5059

Dear Ms. Cox:

Thank you for your on-going coordination on state cleanup sites that interface with the City of Portland stormwater infrastructure and regulatory programs. The Oregon Department of Environmental Quality (DEQ) has considered your comments from your October 2013 letter and intends to issue an amended NFA letter to address them. Specifically, DEQ offers the following responses.

1. DEQ agrees that the No Further Action (NFA) does not clearly define the physical site. DEQ will replace the site description with the following text in a revised NFA letter: *This memo provides the basis for a NFA determination for soil and groundwater for Tax Lots 100, 1500, 1600, 1700, 1800, 1900, and 2000 at 2495 NW Nicolai Street in Portland (ECSI #5059). Calbag Metals also operates on Tax Lot 700 that is leased from the City of Portland and is part of the Guilds Lake remediation area under ECSI #404. Tax Lot 700 is not part of this NFA evaluation since it was part of a separate cleanup decision with the City of Portland in June of 1995.*

2. DEQ will add language to the NFA to further clarify that soil and groundwater were evaluated and found not to be a significant risk to public health or the environment and that the stormwater pathway source control evaluation is ongoing and proceeding toward a separate source control decision.

3. DEQ disagrees with the City of Portland's conclusions regarding the nature of soil characterization, including comments specific to: collection of soil samples from only six borings; absence of soil samples from the shallow soil horizon (three feet or less below ground surface); that the limited data is not necessarily representative of all current and historical site operations; and that the NFA should be conditional because of these data gaps.

   Soil was characterized by collecting samples from nine locations (six borings and three borings that were converted to monitoring wells). Twenty-five soil samples were collected for laboratory analysis and five of these samples were collected from three feet below ground surface to evaluate the shallow soil horizon. Site characterization included laboratory analysis of shallow and deep soil samples collected from nine site wide locations with no contamination detected above regulatory screening levels. The absence of any detected contamination indicates that no significant releases are likely present at the site. DEQ has determined that the data presented in the site investigations is sufficient to support the unconditional NFA determination.

DEQ will continue to coordinate with the City of Portland regarding on-going stormwater source control work at the Calbag Metals Site.

If you have any questions about this letter, please contact me at (503) 229-6431.

Sincerely,

Keith Johnson

Keith Johnson, Manager
NWR Cleanup Section

cc: Jim Orr, DEQ NWR
Dan Hafley, DEQ NWR
Alex Liverman, DEQ NWR
Kevin Loftus, Nicolai LLC
Peter Trabusiner, Blue Mountain Environmental Consulting Inc.
Richard Kent, GeoPro Geologic Services LLC
Linda Scheffler, City of Portland
Kristine Koch, EPA
Richard Muza, EPA
ECSI File# 5059

Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Northwest Region
2020 SW 4th Avenue, # 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-5471
TTY 711

May 30, 2013

Jeffery Wolfstone
601 SW Second Ave., Suite 2100
Portland, Oregon 97204

RE: No Further Action Determination
Calbag Metals
2495 NW Nicolai Street, Portland, OR
ECSI# 5059

Dear Mr. Wolfstone:

The Oregon Department of Environmental Quality (DEQ) has completed a review of all submitted information related to the property located at 2495 NW Nicolai Street in Portland, Oregon. The site consists of Tax Lots 100 and 200 in Section 29, Township 1 North, Range 1 East (Willamette Baseline and Meridian). DEQ review of site-related documents was completed under an Independent Cleanup Pathway agreement signed in August 2009.

DEQ has determined that No Further Action (NFA) is required to address environmental contamination at the Calbag Metals property. This determination is based on the regulations and facts as we now understand them, including but not limited to the following:

1. From 2008 to 2013, site characterizations were performed to determine if soil and groundwater contain significant environmental contamination. Twenty-five soil samples were collected for laboratory analysis from six soil boring and three monitoring well locations. Groundwater was sampled on two occasions from three monitoring wells (November 2008 and March 2010).
2. Constituents detected in soil samples included metals, volatile and semi-volatile organic compounds, and polychlorinated biphenyls (PCBs). All detected concentrations were below applicable standards.
3. The Source Control Evaluation (SCE) investigation sampled asphalt paving material inside the warehouse and in the alley for PCB analysis. PCBs were detected in surficial paving materials at levels below Risk-Based Concentrations (RBCs) but above Portland Harbor Screening Level Values (SLVs). Repaving of the impacted areas within the warehouse and in the alley was performed to prevent PCBs eroding from paving materials to the stormwater system. In addition, two stormwater treatment systems were installed to remove PCBs and other site stormwater contamination.
4. Groundwater samples did not contain contaminants at concentrations above DEQ RBCs, for occupational exposure, with the exception of chloroform. Because of the minor nature of the chloroform exceedences and the unlikely use of site groundwater for human consumption, the detections were not considered significant.
5. The basis for DEQ's NFA determination for the site was outlined in a closure memorandum for the site dated May 2013 and approved by DEQ's NWR Cleanup Section manager. Because no remedial action was completed at the site, public notice of DEQ's NFA determination is not necessary.

DEQ concludes that based on the information presented to date, no further action is required at the Calbag Metals Site by current or future owners under Oregon Environmental Cleanup Law, ORS 465.200 et seq., unless new or previously undisclosed information becomes available, and provided that future activities by site owners/operators neither contribute to or exacerbate existing contamination. We will update our Environmental Cleanup Site Information System database to reflect this decision.

A SCE is underway for the Calbag Metals Site, but has not been completed. The SCE will focus on site catch basins, and the potential for site-related contamination to migrate to the Willamette River via stormwater infrastructure. DEQ is confident, based on groundwater sampling results, that advective transport of site-related groundwater contaminants to the river is not a significant concern. The SCE should be completed in the spring of 2014, after which DEQ will complete a source control decision for the site.

If you have any questions about this letter, please contact me at (503) 229-6431.

Sincerely,

Keith Johnson, Section Manager
DEQ NWR Cleanup Section

cc: Kevin Loftus, Nicolai LLC
Peter Trabusiner, Blue Mountain Environmental Consulting Inc.
Richard Kent, GeoPro Geologic Services LLC
ECSI File 5059

DEQ-DC1

State of Oregon
Department of Environmental Quality

Memorandum

Date: May 30, 2013

To: Calbag Metals file

From: Jim Orr, NWR Cleanup Section

Subject: No Further Action Proposal
Calbag Metals
2495 NW Nicolai Street
Portland, Oregon 97217
ECSI # 5059

Purpose

The Oregon Department of Environmental Quality (DEQ) completed a review of the following documents: *Environmental Site Assessment Subsurface May 2009*, *Groundwater Monitoring Report* (May 2010), *Ecological Level 1 Scoping Report* (December 2012), and *Beneficial Water Use Determination Report* (January 2013). The reports were submitted on the behalf of Shaker Square LLC for the Calbag Metals sites located on NW Nicolai Street. Two Calbag Metals sites at 2495 and 2500 NW Nicolai Street were investigated. DEQ issued an A No Further Action (NFA) determination for the Calbag site at 2500 NW Nicolai Street in August 2011.

This memo provides the basis for a recommended NFA determination for Tax Lots 100 and 200 at 2495 NW Nicolai Street in Portland (ECSI #5059). Site investigation work has been completed under an Independent Cleanup Pathway agreement with Calbag Metals dated August 2009.

Background

The site is located at 2495 NW Nicolai Street in Portland. The parcel is 1.68 acres in size and bounded by NW 25 Place (west), NW Nicolai Street (south), and industrial properties (east and north). See Figures 1 through 4 showing the site location and site layout. The site is located in an industrialized area of northwest Portland, approximately ½ mile southwest of the Willamette River. Historical Sanborn Maps indicate that the sole site building was constructed on undeveloped land in 1949, and has been described as a "Junk Warehouse" during early site operations. Calbag Metals Company purchased the site in 1960 and has operated a non-ferrous scrap metal business to the present day. Calbag purchases, sorts, and packages nonferrous scrap metal for resale on-site. No fabrication is performed on-site and all activities are performed inside the warehouse or on paved surfaces. The 67,281-square foot site building is used for offices, storage, material processing, and loading docks. There are catch basins on-site which connect to local storm sewers; these ultimately discharge to the Willamette River. No sumps or like features are present at the site.

Site Investigation

Environmental investigation efforts for the Calbag Metals site included the following:

August 2008 Phase 1 Environmental Site Assessment completed by Blue Mountain Environmental Consulting Inc. The report recommended that site soil and groundwater should be investigated due to the history of industrial use.

May 2009 Environmental Site Assessment Subsurface was completed by Blue Mountain Environmental Consulting Inc. and GeoPro Geologic Services LLC. The report presents the results of soil and groundwater investigation at the site. From October 2008 to March 2010, soil and groundwater samples were collected from six push-probes points, and three monitoring wells. Push-probe and groundwater monitoring well locations are shown on Figure 4.

May 2010 Groundwater Monitoring Report completed by GeoPro Geologic Services LLC. The report presents groundwater sampling results from November 2008 and March 2010.

December 2012 Ecological Level 1 Scoping completed by GeoPro Geologic Services LLC. The report found no significant ecological habitat because the entire site is either paved or covered by buildings.

January 2013 Beneficial Water Use Determination completed by GeoPro Geologic Services LLC. The report indicated that there is no use of groundwater for drinking or other purposes in the immediate site vicinity (within ¼ mile radius). The primary identified "beneficial use" of groundwater is recharge of Willamette River and limited industrial use of deeper groundwater.

Remedial Investigation Results

An environmental site assessment was performed by Blue Mountain Environmental Consulting Inc. and GeoPro Geologic Services LLC in May 2009. The site and surrounding area are located on a geomorphic terrace situated along the western margin of the Willamette River. The terrace is formed by Quaternary sedimentary flood deposits and Pleistocene fine-grained geologic units of coarse sand to silt. The site is directly underlain mainly by Pleistocene flood deposits with a thin veneer of artificial fill at the ground surface (Figure 4). Investigation at the site encountered approximately 1 foot of fill, overlying clayey silt to about 12 feet, and silty sand with lenses of gravel to 55 feet below ground surface (bgs).

Groundwater was encountered at the site from approximately 39 to 46 feet bgs in site borings. Groundwater sampling locations form the three monitoring wells (MW-1, MW-2, and MW-3). Wells were sampled on two occasions (November 2008 and March 2010). Flow in the shallow aquifer was determined to be northeast towards the Willamette River.

Groundwater samples contained no constituents at concentrations above relevant Risk-Based Concentrations (RBCs) presented in DEQ's *Risk Decision-Making for the Remediation of Petroleum-Contaminated Sites* (September 2003, subsequently updated) with the exception of chloroform. Chloroform was detected in water samples from MW-1 and MW-3 at concentrations ranging from 0.44 ug/l to 1.3 ug/l. Analytical results for groundwater samples and relevant RBCs are shown in Table 2. Twenty-five soil samples were collected for laboratory analysis from six soil boring and three monitoring well locations. Soil sample were collected from three to ten feet bgs. Polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals including barium, cadmium, chromium, and lead were detected in soil samples collected at three feet bgs at levels below RBCs. All soil samples below three feet bgs were either below detection limits or RBCs. Soil sampling results are presented in Tables 3 and 4.

The Source Control Evaluation (SCE) investigation sampled asphalt paving material inside the warehouse and in the alley for PCB analysis. PCBs were detected in surficial paving materials at levels below RBCs but above Portland Harbor Screening Level Values (SLVs). Repaving of the impacted areas within the warehouse and in the alley was performed to prevent PCBs eroding from paving materials to the stormwater system. In addition, two stormwater treatment systems were installed to remove PCBs and other site stormwater contamination.

Risk Assessment

A risk assessment evaluation was completed based on the findings of the reports discussed above and conclusions summarized below. The data collected is considered by DEQ sufficient for risk evaluation.

A Conceptual Site Model for the site was developed, based in part on evaluations of beneficial land use and water use for the site and surrounding area. The current and likely future land use for the site is expected to be industrial, consistent with the current zoning designation and historical use. Beneficial water use is limited to industrial use within the Locality of Facility. There is no use of groundwater for drinking water or other purposes in the immediate site vicinity (within ¼ mile radius). Water uses include industrial ground water wells (located greater than ¼ mile radius from the site) and recharge of the Willamette River. Land use for the area is expected to remain as industrial in the future. A Level I ecological risk screening found no significant ecological habitat because the site is either paved or covered by buildings.

The following are the identified current and potential future human receptors and exposure pathways for the site:

- Occupational worker – Incidental ingestion, dermal, and inhalation exposure to soil. Indoor and outdoor vapor transport from groundwater.
- Construction worker - Incidental ingestion, dermal, and inhalation exposure to soil. Dermal and inhalation exposure to groundwater.
- Excavation worker - Incidental ingestion, dermal, and inhalation exposure to soil. Dermal and inhalation exposure to groundwater.

For the purpose of DEQ's risk screening for the site, occupational RBCs for soil and groundwater are used. Portland Harbor SLVs that are reported in the soil Tables 3 and 4 and groundwater SLVs in Table 1 are not considered relevant for risk screening due to an absence of ecological receptors at the site, and an incomplete migration pathway to the Willamette River. A Portland Harbor SCE is being completed separately for this site. The potential for site contamination to impact the Portland Harbor Superfund study area, principally through contaminant discharge to site catch basins, will be addressed in the SCE.

Low levels of contaminants of interest were detected in some subsurface soils and shallow groundwater at the site. Constituents detected in ground water included VOCs and metals. Chloroform was detected in water sampled from MW-1 and MW-3 ranging from 0.44 ug/l to 1.3 ug/l. Because of the minor exceedences of the chloroform RBC concentration (0.99 ug/l) and the unlikely use of site groundwater for human consumption, the detections were not considered significant. PAHs were not detected in ground water above detection limits. Low levels of VOCs were also detected in groundwater samples that were below relevant RBCs. Given the low levels or absence of observed groundwater contamination on-site, it was concluded that no risk to the Willamette River or human health was present.

Constituents detected in soil samples include barium, cadmium, chromium, lead, VOCs, PAHs, and PCBs. All detected soil sample constituents are below RBCs. PCBs were detected in surficial paving materials at levels below RBCs but above Portland Harbor SLVs.

DEQ Conclusions

Significant impacts to soil and groundwater exceeding RBCs were not observed at the site. Based on the above information, DEQ concludes that no further action is required to address environmental contamination at the site.

A SCE is underway, but has not been completed to date for the Calbag Metals site. The SCE investigation is required by DEQ when site drainage discharges to the Willamette River and the site is located within the Portland Harbor Superfund study area. The evaluation should be completed in the spring of 2014, after which DEQ will prepare a source control decision for the site.

With the exception of low chloroform detection, contaminants detected in site soil and groundwater at the Calbag site are below relevant risk criteria. Because exceedences of the chloroform RBC are minor, and groundwater within the locality of the facility is not used for human consumption, the exceedences are not considered significant.

<u>References</u>

August 2008 Phase 1 Environmental Site Assessment, Blue Mountain Environmental Consulting Inc.

May 2009 Environmental Site Assessment Subsurface, Blue Mountain Environmental Consulting Inc. and GeoPro Geologic Services LLC.

May 2010 Groundwater Monitoring Report, GeoPro Geologic Services LLC.

December 2012 Ecological Level 1 Scoping, GeoPro Geologic Services LLC

January 2013 Beneficial Water Use Determination, GeoPro Geologic Services LLC

DEQ ECSI Site File

<u>Figures</u>

Figure 1 – Location Map, Portland Oregon
Figure 2 – Geology Map, Northwest Portland, Oregon
Figure 3 – Adjacent Properties, NW Nicolai, Portland Oregon
Figure 4 – Drilling Locations, Calbag site

<u>Tables</u>

Table 2 – Groundwater Analysis Monitor Wells
Table 3 – Sample Analysis Monitoring Wells
Table 4 – Sample Analysis Boring Soils

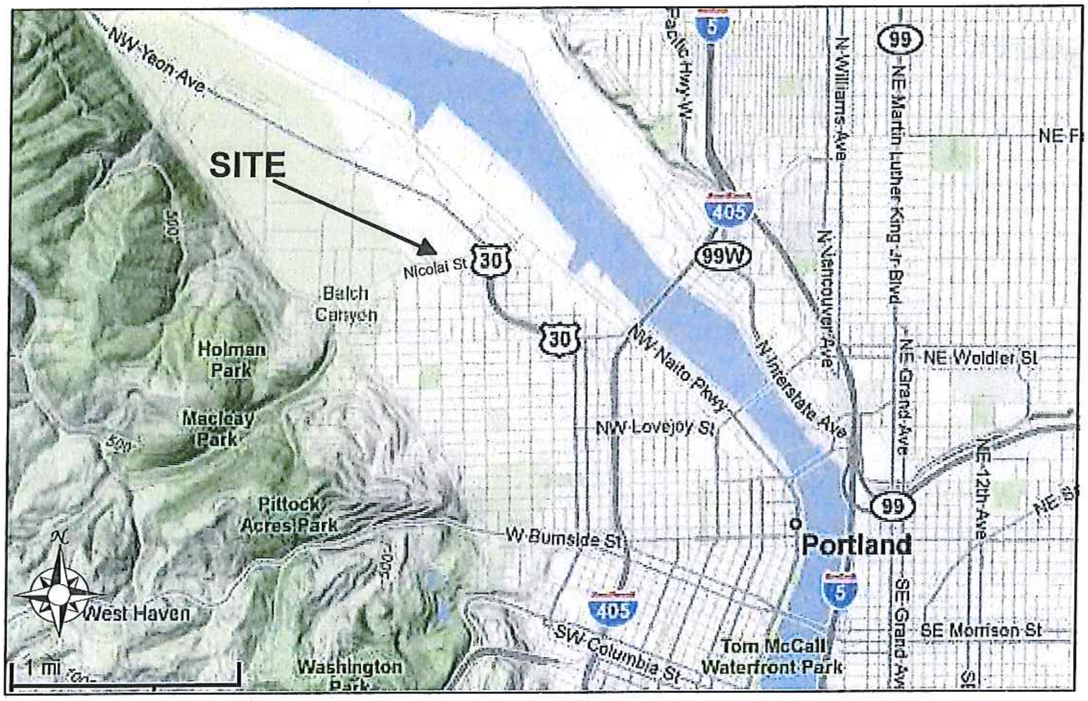
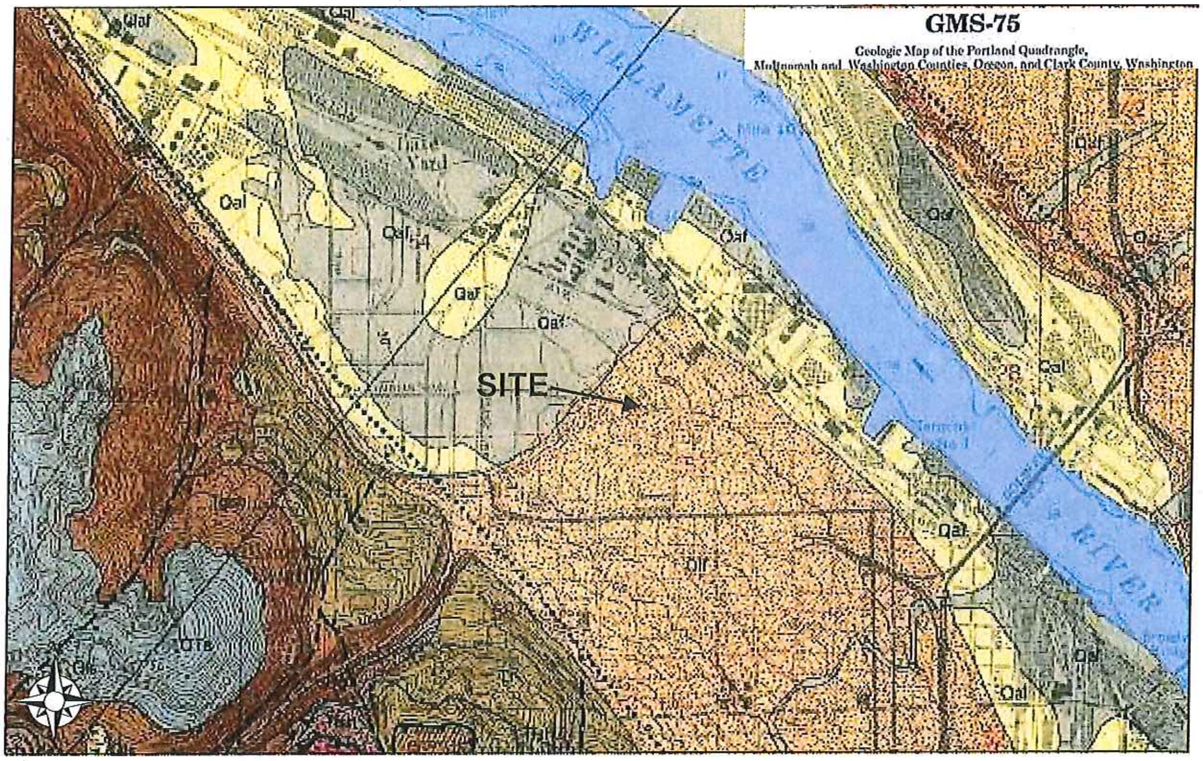


Figure 1 – Location Map, Portland, Oregon



Legend

Symbol	Description
Qaf	**Artificial fill (Holocene)** — Sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends. Unit **Qaf** is mapped only where fill has eliminated lakes, sloughs, marshes, or gullies delineated during 1898 survey for earliest topographic map of Portland (U.S. Geological Survey, 1905). Fill areas mapped with queried contacts represent lakes and marshes that may have been drained rather than filled. Fill 1.5 to 5 m thick is common in developed areas of Columbia and Willamette floodplains, but thickness and distribution are highly variable, and it is not depicted on this map
Qal	**Alluvium (Quaternary)** — River and stream deposits of silt, sand, and organic-rich clay with subordinate gravel of mixed lithologies; largely confined to Columbia and Willamette River channels and valley bottoms of tributary streams; may include local lacustrine, paludal, and eolian deposits. Unit **Qal** reaches maximum thickness of 45 m
Qff	**Fine-grained facies (Pleistocene)** — Coarse sand to silt deposited by catastrophic floods. Silt and fine sand composed predominantly of quartz and feldspar with white mica. Coarser sand composed predominantly of Columbia River basalt. Poorly defined beds of 30-cm to 1-m thickness are observed in outcrop. Locally, beds are separated by accumulations of clay and iron oxide 1 to 6 cm thick, which may be paleosols. Modern soil development commonly introduces abundant clay and iron oxides into upper 2 to 3 m of deposits. Fine sediments are locally thick in lower elevations of area and extend upslope as mantle to elevations between 90 and 105 m. Unit **Qff** reaches maximum thickness of 30 to 40 m. Unit **Qff** is equivalent to Willamette Silt of Allison (1953) and includes lacustrine sand, lacustrine silt and clay, and sand and silt deposits of Trimble (1963)

Figure 2 – Geology Map, Northwest Portland, Oregon

Guilds Lake Remediation Project

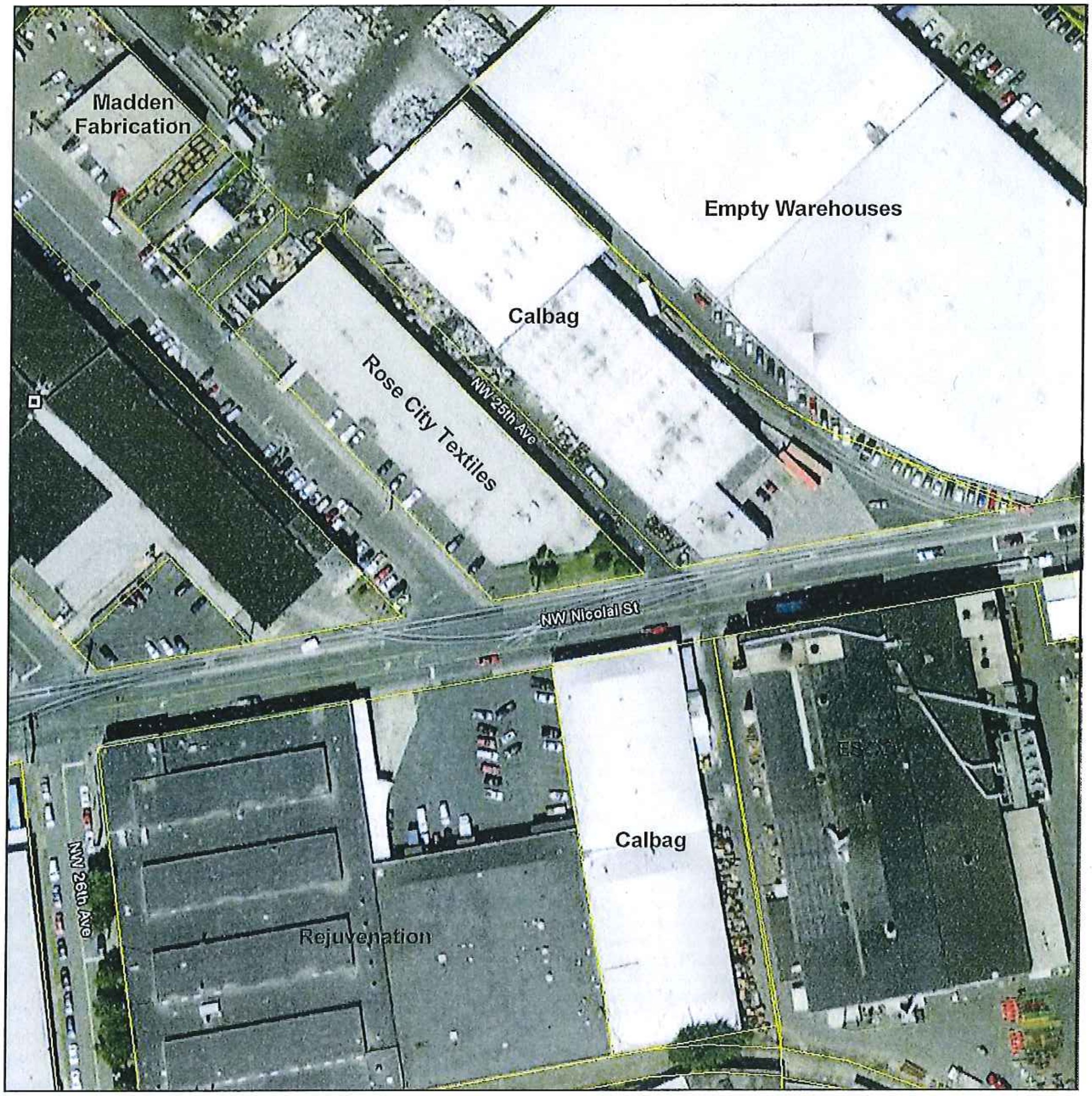


Figure 3 – Adjacent Properties, NW Nicolai St., Portland, Oregon

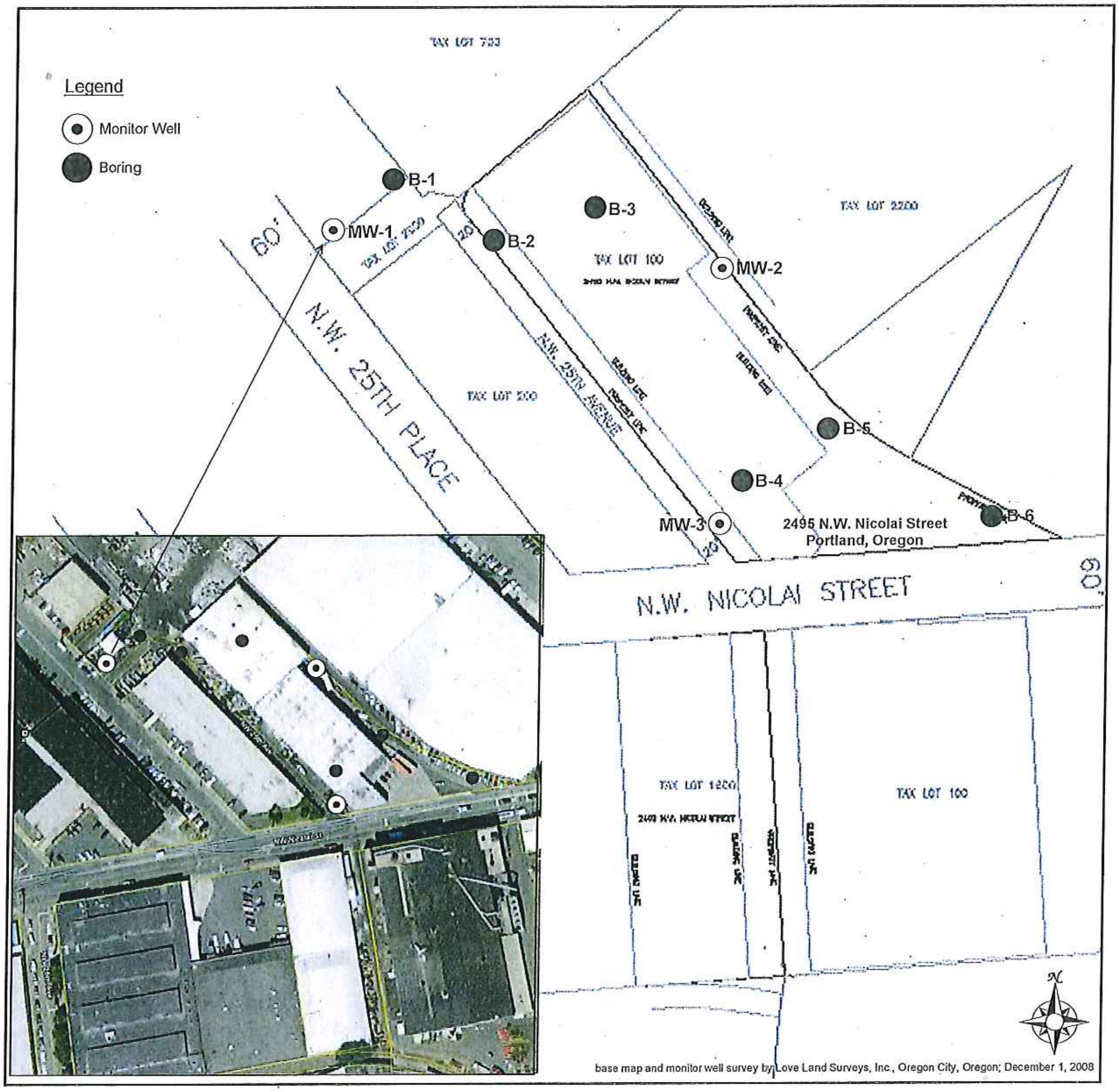


Figure 4 – Drilling Locations

Table 2 - Groundwater Analyses Monitor Wells

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
METALS-TOTAL (EPA 200.8/7470A)										
Antimony	1600				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Arsenic	150	0.038	0.13	0.27	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Beryllium	5.3	73	150	290	<11	<11	<11	<11	<11	<11
Cadmium	2.2	18	37	73	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
Chromium	11	55,000	110,000	220,000	<11	<11	<11	<11	<11	<11
Copper	9	1500	2900	5800	<11	<11	<11	<11	<11	<11
Lead	2.5	15	15	15	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Mercury	0.77	11	22	44	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	52	730	1500	2900	<22	<22	<22	<22	<22	<22
Selenium	5				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Silver	0.12				<11	<11	<11	<11	<11	<11
Thallium	40				<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
Zinc	120				<28	<56	<28	<56	<28	<56
METALS-DISSOLVED (EPA 200.8/7470A)										
Antimony	1600				<5		<5		<5	
Arsenic	150	0.038	0.13	0.27	<3		<3		<3	
Beryllium	5.3	73	150	290	<10		<10		<10	
Cadmium	2.2	18	37	73	<4		<4		<4	
Chromium	11	55,000	110,000	220,000	<10		<10		<10	
Copper	9	1500	2900	5800	<10		<10		<10	
Lead	2.5	15	15	15	<1		<1		<1	

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Mercury	0.77	11	22	44	<0.5		<0.5		<0.5	
Nickel	52	730	1500	2900	<20		<20		<20	
Selenium	5				<5		<5		<5	
Silver	0.12				<10		<10		<10	
Thallium	40				<5		<5		<5	
Zinc	120				<50		<50		<50	
PCBs AROCLORS (EPA 8082)										
Aroclor 1016		0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1221	0.28	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1232	0.58	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1242	0.053	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1248	0.081	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1254	0.033	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
Aroclor 1260	94	0.005	0.024	0.027	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047
ORGANOCHLORINE PESTICIDES (EPA 8081A)										
alpha-BHC	2.2				<0.0047		<0.0047		<0.0047	
beta-BHC	2.2				<0.0047		<0.0047		<0.0047	
delta-BHC					<0.0047		<0.0047		<0.0047	
gamma-BHC (Lindane)	0.052	0.012	0.058	0.065	<0.0047		<0.0047		<0.0047	
Heptachlor	0.08	0.0029	0.014	0.016	<0.0047		<0.0047		<0.0047	
Aldrin	0.06	0.00077	0.0037	0.0041	<0.0047		<0.0047		<0.0047	
Heptachlor Expoxide	0.0038	0.0062	0.022	0.045	<0.0047		<0.0047		<0.0047	
gamma-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
alpha-Chlordane	0.0043	0.037	0.18	0.2	<0.0047		<0.0047		<0.0047	
4,4'-DDE		0.039	0.19	0.21	<0.0047		<0.0047		<0.0047	
4,4'-DDD	0.001	0.24	0.82	1.7	<0.0047		<0.0047		<0.0047	
4,4'-DDT	0.001	0.17	0.58	1.2	<0.0047		<0.0047		<0.0047	
Dieldrin	0.056	0.00081	0.0039	0.0044	<0.0047		<0.0047		<0.0047	
Endosulfan I	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endosulfan II	0.056	220	440		<0.0047		<0.0047		<0.0047	
Endrin	0.036	11	22	44	<0.0047		<0.0047		<0.0047	
Endrin Aldehyde					<0.0047		<0.0047		<0.0047	
Methoxychlor	0.03				<0.0094		<0.0094		<0.0094	
Endosulfan Sulfate					<0.0047		<0.0047		<0.0047	
Endrin Ketone					<0.019		<0.019		<0.019	
Toxaphene					<0.047		<0.047		<0.047	
VOLATILE ORGANIC CHEMICALS (EPA 8260B)										
1,1,1,2-Tetrachloroethane	186				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,1-Trichloroethane	11	9,100	18,000	38,000	<0.2	<0.2	<0.2	<0.2	<0.2	**0.46**
1,1,2,2-Tetrachoroethane	2,200				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2-Trichoroethane	9,400	0.23	0.83	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	47	2.3	11	13	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethene	25	340	680	1,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloropropene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	110				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
1,2,4-Trimethylbenzene		15	29	61	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane					<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (EDB)		0.0063	0.031	0.034	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	14	370	740	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane (EDC)	20,000	0.14	0.69	0.78	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	5,700				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene		360	730	1,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	71				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	15	0.42	2.3	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,2-Dichloropropane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)					<5	<5	<5	<5	<5	<5
2-Chloroethyl Vinyl Ether	4,760				<1	<1	<1	<1	<1	<1
2-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Hexanone	99				<2	<2	<2	<2	<2	<2
4-Chlorotoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetone	1,500				<5	<5	<5	<5	<5	<5
Benzene	130	0.39	1.7	2.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromobenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane		0.12	0.59	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromoform		2.7	12	16	<1	<1	<1	<1	<1	<1
Bromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carbon Disulfide	0.92				<0.2	<0.2	<0.2	<0.2	<0.2	**0.28**
Carbon Tetrachloride	74	0.41	1.7	2.4	<0.2	<0.2	<0.2	<0.2	**0.35**	**0.31**
Chloroethane		21,000	42,000	88,000	<1	<1	<1	<1	<1	<1

CHEMICALS	DEQ SLV ug/l[1]	DEQ RBC ug/l[2]			MW-1 (40-50) ug/l[3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Chlorobenzene	50	91	180	380	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroform	1,240	0.19	0.98	0.99	1.3	1.2	<0.2	<0.2	0.44	0.81
Chloromethane		190	380	790	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	590	73	150	290	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluoromethane					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	7.3	1.4	6.7	7.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene		0.0081	0.39	0.44						
Hexachlorobutadiene	9.3				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)					<1	<1	<1	<1	<1	<1
Isopropylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m,p-Xylene	1.8	200	410	850	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methylene Chloride	2,200				<1	<1	<1	<1	<1	<1
Methy t-Butyl Ether (MTBE)		12	53	67	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methyl Isobutyl Ketone					<2	<2	<2	<2	<2	<2
Naphthalene	620	0.14	0.78	0.72	<1	<1	<1	<1	<1	<1
n-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Propylbenzene		680	1,400	2,800	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-Xylene		200	410	850	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Isopropyltoluene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
sec-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene		1,600	3,200	6,700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tert-Butylbenzene					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Tetrachloroethene	840	11	49	64	**0.3**	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	9.8	2,300	4,600	9,200	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	590	110	210	450	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene	244				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethene	21,900	0.43	1.7	3.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane (Freon 11)		1,300	2,600	5,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vinyl Acetate	16				<2	<2	<2	<2	<2	<2
Vinyl Chloride		0.025	0.059	0.52	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)										
Naphthalene	620	0.14	0.78	0.72	<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
2-Methylnaphthalene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
1-Methylnaphthalene	201				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenaphthylene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Acenapththene	520	2,200			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluorene	3.9	1,500			<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Phenanthrene	6.3				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Anthracene	13				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Fluoranthene	6.16				<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Pyrene					<0.095	<0.094	<0.095	<0.095	<0.094	<0.094
Benzo(a)anthracene	0.027	0.029	0.088	0.56	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Chrysene		0.16	0.66		<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(b)fluoranthene		0.011	0.039	0.16	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(k)fluoranthene		0.29			<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(a)pyrene	0.014	0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094

CHEMICALS	DEQ SLV ug/l [1]	DEQ RBC ug/l [2]			MW-1 (40-50) ug/l [3]		MW-2 (39-49) ug/l		MW-3 (45-55) ug/l	
		Res	URes	Occ	11/10/08[3]	3/30/10[3]	11/10/08[3]	3/22/10[3]	11/10/08[3]	3/22/10[3]
Ideno(1,2,3-c,d)pyrene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Dibenz(a,h)anthracene		0.0029	0.0088	0.056	<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
Benzo(g,h,i)perylene					<0.0095	<0.0094	<0.0095	<0.0095	<0.0094	<0.0094
PETROLEUM HYDROCARBONS										
Diesel Range (NWTPH-Dx)		100	100	430	<250	<250	<250	<250	<250	<250
Lube Oil Range (NWTPH-Dx)					<400	<400	<400	<400	<400	<400
Gasoline (NWTPH-Gx)		110	110	450	<100	<100	<100	<100	<100	<100
Oil & Grease (EPA 1664)					<5200		<5200		<5200	
Total Organic Carbon						<1000		<1000		<1000

Notes:
[1] *Freshwater aquatic Screening Level Values (SLVs) from DEQ Ecological Risk Assessment: Level I, II, III, IV, 1998.*
[2] *Risk-Based Concentrations (RBCs) for ingestion & inhalation from tapwater, "Risk-Based Decisionmaking Guidance", DEQ, 2003, Table of Risk-Based Concentrations (updated June 7, 2012). RBCs for residential (Res), Urban Residential (URes), and Occupational (Occ) exposures.*
[3] *Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.*
[4] *Date of sampling.*
*Blank cell means not analyzed, or no available SLV/RBC. Detected concentration below practical quantitation limit (PQL) noted as (<) with its respective PQL value. **Bolded** values are concentrations detected above the respective PQL.*
Grey shaded cells are PQLs greater than one or more respective DEQ RBC. Yellow shaded cells are detected concentrations that exceed one or more DEQ RBC.

Table 3 – Sample Analyses Monitoring Wells

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3[3]	MW1 -S-6	MW1 -S-11	MW2 -S-05	MW2-S-10	MW-2-15	MW3 -S-03	MW-3-06	MW-3-09	Groundwater SLV[4]ug/l	Groundwater Samples MW-1 40-50 ug/l[5]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg													
Antimony	64	410[a]										6	<5.6	<5.6	<5.6
Arsenic	7	1.7	<13	<13	<13	<14	<14	<12	<12	<13	<13	0.045	<3.3	<3.3	<3.3
Beryllium	na	2000										na	<11	<11	<11
Barium	na	$>100x10^{3}$	190	170	200	160	150	120	200	170	150	na			
Cadmium	1	510	<0.63	<0.66	<0.63	<0.68	<0.68	<0.58	<0.6	<0.65	<0.64	0.094	<4.4	<4.4	<4.4
Chromium (total)	111	180	19	24	21	19	21	13	17	27	17	100	<11	<11	<11
Copper	149	38000										2.7	<11	<11	<11
Lead	17	800	150	12	6.5	14	8	6.1	200	13	8.1	0.54	<1.1	<1.1	<1.1
Mercury	0.07	310	<0.32	<0.33	<0.31	<0.34	<0.34	<0.29	0.65	<0.32	<0.32	0.77	<0.5	<0.5	<0.5
Nickel	48.6	20000										16	<22	<22	<22
Selenium	2	5100[a]	<13	<13	<13	<14	<14	<12	<12	<13	<13	5	<5.6	<5.6	<5.6
Silver	5	5100	<0.63	<0.66	<0.63	<0.68	<0.68	<0.58	<0.6	<0.65	<0.64	0.12	<11	<11	<11
Thallium	na	82[a]										na	<5.6	<5.6	<5.6
Zinc	459	310[a]										36	<28	<28	<28
METALS-DISSOLVED (EPA 200.8/7470A)	na														
Antimony												6	<5	<5	<5
Arsenic												0.045	<3	<3	<3
Beryllium												na	<10	<10	<10
Barium												na			
Cadmium												0.094	<4	<4	<4
Chromium (total)												100	<10	<10	<10
Copper												2.7	<10	<10	<10

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3	MW1 -S-6	MW1 -S-11	MW2 -S-05	MW2-S-10	MW-2-15	MW3 -S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Lead												0.54	<1	<1	<1
Mercury												0.77	<0.5	<0.5	<0.5
Nickel												16	<20	<20	<20
Selenium												5	<5	<5	<5
Silver												0.12	<10	<10	<10
Thallium												na	<5	<5	<5
Zinc												36	<50	<50	<50
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg													
Aroclor 1016	530	21000[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.96	<0.047	<0.047	<0.047
Aroclor 1221		620[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1232		620[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1242		740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1248	1500	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1254	300	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.033	<0.047	<0.047	<0.047
Aroclor 1260	200	740[a]	<63	<66	<63	<68	<68	<58	<60	<65	<64	0.034	<0.047	<0.047	<0.047
Aroclor 1262			<63	<66	<63	<68	<68	<58	<60	<65	<64	na			
Aroclor 1268			<63	<66	<63	<68	<68	<58	<60	<65	<64	na			
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg														
alpha-BHC												0.0049	<0.004 7	<0.0047	<0.004 7
beta-BHC												0.017	<0.004 7	<0.0047	<0.004 7
delta-BHC												0.037	<0.004 7	<0.0047	<0.004 7
gamma-BHC (Lindane)	4.99											0.052	<0.004 7	<0.0047	<0.004 7
Heptachlor	10											0.000079	<0.004 7	<0.0047	<0.004 7

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Aldrin	40											0.00005	<0.0047	<0.0047	<0.0047
Heptachlor Expoxide	16											0.000039	<0.0047	<0.0047	<0.0047
gamma-Chlordane	0.37											0.00081	<0.0047	<0.0047	<0.0047
alpha-Chlordane	0.37											0.00081	<0.0047	<0.0047	<0.0047
4,4'-DDE	0.33											0.00022	<0.0047	<0.0047	<0.0047
4,4'-DDD	0.33											0.00031	<0.0047	<0.0047	<0.0047
4,4'-DDT	0.33											0.00022	<0.0047	<0.0047	<0.0047
Dieldrin	0.0081											0.000054	<0.0047	<0.0047	<0.0047
Endosulfan I												0.051	<0.0047	<0.0047	<0.0047
Endosulfan II												0.051	<0.0047	<0.0047	<0.0047
Endrin	207											0.036	<0.0047	<0.0047	<0.0047
Endrin Aldehyde												na	<0.0047	<0.0047	<0.0047
Methoxychlor												0.03	<0.0094	<0.0094	<0.0094
Endosulfan Sulfate												89	<0.0047	<0.0047	<0.0047
Endrin Ketone												na	<0.019	<0.019	<0.019
Toxaphene												0.0002	<0.047	<0.047	<0.047
VOLATILE ORGANIC CHEMICALS (EPA 8260B)	ug/kg														
1,1,1,2-Tetrachloroethane												2.5	<0.2	<0.2	<0.2
1,1,1-Trichloroethane												11	<0.2	<0.2	<0.2
1,1,2,2-Tetrachoroethane												0.33	<0.2	<0.2	<0.2
1,1,2-Trichoroethane												1.2	<0.2	<0.2	<0.2

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
1,1-Dichloroethane												47	<0.2	<0.2	<0.2
1,1-Dichloroethene												na	<0.2	<0.2	<0.2
1,1-Dichloropropene												na	<0.2	<0.2	<0.2
1,2,3-Trichlorobenzene												na	<0.2	<0.2	<0.2
1,2,3-Trichloropropane												0.0095	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	9200											8.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene												na	<0.2	<0.2	<0.2
1,2-Dibromo-3-chloropropane												na	<1	<1	<1
1,2-Dibromoethane												0.033	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	1700											49	<0.2	<0.2	<0.2
1,2-Dichloroethane												0.73	<0.2	<0.2	<0.2
1,2-Dichloropropane	300											0.97	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene												na	<0.2	<0.2	<0.2
1,3-Dichlorobenzene												14	<0.2	<0.2	<0.2
1,3-Dichloropropane												na	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	300											2.8	<0.2	<0.2	<0.2
2,2-Dichloropropane												na	<0.2	<0.2	<0.2
2-Butanone (Methyl Ethyl Ketone)												7100	<5	<5	<5
2-Chloroethyl Vinyl Ether												na	<1	<1	<1
2-Chlorotoluene												na	<0.2	<0.2	<0.2
2-Hexanone												99	<2	<2	<2
4-Chlorotoluene												na	<0.2	<0.2	<0.2
Acetone												1500	<5	<5	<5
Benzene												1.2	<0.2	<0.2	<0.2

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Bromobenzene												na	<0.2	<0.2	<0.2
Bromochloromethane												na	<0.2	<0.2	<0.2
Bromodichloromethane												1.1	<0.2	<0.2	<0.2
Bromoform												8.5	<1	<1	<1
Bromomethane												8.7	<0.2	<0.2	<0.2
Carbon Disulfide												0.92	<0.2	<0.2	<0.2
Carbon Tetrachloride												0.51	<0.2	<0.2	**0.35**
Chlorethane												23	<1	<1	<1
Chlorobenzene												50	<0.2	<0.2	<0.2
Chloroform												0.17	1.3	<0.2	**0.44**
Chloromethane												2.1	<1	<1	<1
cis-1,2-Dichloroethylene												61	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene												na	<0.2	<0.2	<0.2
cis-1,3-Dichloropropene												0.055	<0.2	<0.2	<0.2
Dibromochloromethane												na	<0.2	<0.2	<0.2
Dibromomethane												61	<0.2	<0.2	<0.2
Dichlorodifluoromethane												390	<0.2	<0.2	<0.2
Ethylbenzene												7.3	<0.2	<0.2	<0.2
Hexachlorobenzene	19											0.00029			
Hexachlorobutadiene	600											0.86	<0.2	<0.2	<0.2
Iodomethane (Methyl Iodide)												na	<1	<1	<1
Isopropylbenzene												660	<0.2	<0.2	<0.2
m,p-Xylene												1.8	<0.4	<0.4	<0.4
Methylene Chloride												8.9	<1	<1	<1
Methyt-Butyl Ether												37	<0.2	<0.2	<0.2

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3	MW1-S-6	MW1-S-11	MW2-S-05	MW2-S-10	MW-2-15	MW3-S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Methyl Isobutyl Ketone												na	<2	<2	<2
Naphthalene												0.2	<1	<1	<1
n-Butylbenzene												na	<0.2	<0.2	<0.2
n-Propylbenzene												na	<0.2	<0.2	<0.2
o-Xylene												13	<0.2	<0.2	<0.2
p-Isopropyltoluene												na	<0.2	<0.2	<0.2
sec-Butylbenzene												na	<0.2	<0.2	<0.2
Styrene												100	<0.2	<0.2	<0.2
tert-Butylbenzene												na	<0.2	<0.2	<0.2
Tetrachloroethene	500											0.12	<0.2	<0.2	<0.2
Toluene												9.8	<1	<1	<1
trans-1,2-Dichloroethene												110	<0.2	<0.2	<0.2
trans-1,3-Dichloropropene												0.055	<0.2	<0.2	<0.2
Trichloroethene	2100											0.17	<0.2	<0.2	<0.2
Trichlorofluoromethane												1300	<0.2	<0.2	<0.2
Vinyl Acetate												16	<2	<2	<2
Vinyl Chloride												0.015	<0.2	<0.2	<0.2
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg													
Naphthalene	561	22000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
2-Methylnaphthalene	200		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
1-Methylnaphthalene	na		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	na	<0.095	<0.095	<0.094
Acenaphthylene	200		<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Acenpththene	300	41x10^6	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Fluorene	536	35x10^6	<8.4	<8.8	<8.3	<9.1	<9	<7.8	<8	<8.7	<8.5	0.2	<0.095	<0.095	<0.094

CHEMICALS	SOIL SLV[1]	OCC RBC[2]	MW1-S-3	MW1 -S-6	MW1 -S-11	MW2 -S-05	MW2-S-10	MW-2-15	MW3 -S-03	MW-3-06	MW-3-09	Groundwater SLV[2] ug/l	MW-1 40-50 ug/l[3]	MW-2 39-49 ug/l	MW-3 45-55 ug/l
Phenanthrene	1170		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**240**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Anthracene	845		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**39**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Fluoranthene	2230	29x10⁶	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1700**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Pyrene	1520	21x10⁶	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1400**	<8.7	<8.5	0.2	<0.095	<0.095	<0.094
Benzo(a)anthracene	1050	2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1700**	<8.7	<8.5	0.18	<0.0095	<0.0095	<0.0094
Chrysene	1290	270000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**2400**	<8.7	<8.5	0.18	<0.0095	<0.0095	<0.0094
Benzo(b)fluoranthene		2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**3000**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Benzo(k)fluoranthene	13000	27000	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**820**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Benzo(a)pyrene	1450	270	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1400**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Ideno(1,2,3-c,d)pyrene	100	2700	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1000**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Dibenz(a,h)anthracene	1300	270	<8.4	<8.8	<8.3	<9.1	<9	<7.8	**520**	<8.7	<8.5	0.018	<0.0095	<0.0095	<0.0094
Benzo(g,h,i)perylene	300		<8.4	<8.8	<8.3	<9.1	<9	<7.8	**1300**	<8.7	<8.5	0.2	<0.0095	<0.0095	<0.0094
PETROLEUM HYDROCARBONS	ug/kg														
Diesel Range (NWTPH-Dx)			<32000										<250	<250	<250
Lube Oil Range (NWTPH-Dx)			<63000										<400	<400	<400
Gasoline (NWTPH-HCID)	22x10⁶	22x10⁶	<22000												
Diesel Fuel (NWTPH-HCID)	70x10⁶	70x10⁶	<56000												
Lube Oil (NWTPH-HCID)			<110000												
TPH-Gas (NWTPH-Gx)													<100	<100	<100
Oil & Grease (EPA 1664)													<5200	<5200	<5200
% Moisture															

Notes:
[1] *Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.*
[2] *DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by (a)*
[3] *Soil sample from boring for monitoring well; example MW1-S-3 is soil sample from MW1 boring taken from 3 feet depth below ground surface.*
[4] *Screening Level Values (SLVs) for water from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted yellow on the table.*
[5] *Monitoring well number, with screened interval in feet depth below ground surface and detected values in ug/l.*
Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value. ***Bolded values are concentrations detected above the respective PQL.*** ***Grey*** *shaded cells are PQLs greater than JSCS SLV; Yellow shaded cells are detected concentrations that exceed JSCS screening level values. Green shaded cells are detected concentrations that exceed RBCs for direct contact for occupational workers. Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.*

Table 4 –Sample Analyses Boring Soils

CHEMICALS	Soil SLV[1]	OCC RBC[2]	B-1-12[3]	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
METALS-TOTAL (EPA 6010B/7471A)	mg/kg	mg/kg																
Antimony	64	410[a]																
Arsenic	7	1.7	<13	<13	<13	<13	<11	<11	<12	**17**	<13	<14	<13	<14	<14	<14	<14	<14
Beryllium	na	2000																
Barium	na	>100x10[3]	**220**	**200**	**170**	**190**	**110**	**110**	**160**	**210**	**210**	**160**	**210**	**220**	**180**	**180**	**170**	**150**
Cadmium	1	510	<0.67	<0.64	<0.65	<0.67	<0.57	<0.56	<0.62	**1.1**	<0.63	<0.68	<0.65	<0.68	<0.69	<0.68	<0.68	<0.68
Chromium (total)	111	180	**22**	**24**	**26**	**25**	**20**	**13**	**26**	**21**	**19**	**19**	**35**	**29**	**22**	**21**	**23**	**24**
Copper	149	38000																
Lead	17	800	**11**	**15**	**10**	**10**	**140**	**81**	**12**	**29**	**9.9**	**12**	**12**	**12**	**14**	**11**	**9**	**10**
Mercury	0.07	310	<0.33	<0.32	<0.32	<0.33	<0.28	<0.28	<0.31	<0.32	<0.32	<0.34	<0.32	<0.34	<0.35	<0.34	<0.34	<0.34
Nickel	48.6	20000																
Selenium	2	5100[a]	<13	<13	<13	<13	<11	<11	<12	<13	<13	<14	<13	<14	<14	<14	<14	<14
Silver	5	5100	<0.67	<0.64	<0.65	<0.67	<0.57	<0.56	<0.62	<0.65	<0.63	<0.68	<0.65	<0.68	<0.69	<0.68	<0.68	<0.68
PCBs AROCLORS (EPA 8082)	ug/kg	ug/kg																
Aroclor 1016	530	21000	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68

CHEMICALS	Soil SLV[1]	OCC RBC[2]	B-1-12	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
Aroclor 1221		620	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1232		620	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1242		740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1248	1500	740	<67	<64	<65	<67	**110**	**69**	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1254	300	740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1260	200	740	<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1262			<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
Aroclor 1268			<67	<64	<65	<67	<57	<56	<62	<65	<63	<68	<65	<68	<69	<68	<68	<68
ORGANOCHLORINE PESTICIDES (EPA 8081A)	ug/kg	ug/kg																
alpha-BHC														<6.8	<6.9			
beta-BHC														<6.8	<6.9			
delta-BHC														<6.8	<6.9			
gamma-BHC (Lindane)	4.99													<6.8	<6.9			
Heptachlor	10													<6.8	<6.9			
Aldrin	40													<6.8	<6.9			
Heptachlor Expoxide	16													<6.8	<6.9			
gamma-Chlordane	0.37													<14	<14			
alpha-Chlordane	0.37													<14	<14			
4,4'-DDE	0.33													<14	<14			
4,4'-DDD	0.33													<14	<14			
4,4'-DDT	0.33													<14	<14			
Dieldrin	0.0081													<14	<14			
Endosulfan I														<6.8	<6.9			
Endosulfan II														<14	<14			
Endrin	207													<14	<14			

CHEMICALS	Soil SLV[1]	OCC RBC[2]	B-1-12	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
Endrin Aldehyde														<14	<14			
Methoxychlor														<14	<14			
Endosulfan Sulfate														<14	<14			
Endrin Ketone														<14	<14			
Toxaphene														<68	<69			
POLYCYCLIC AROMATIC HYDROCARBONS (EPA 8270D/SIM)	ug/kg	ug/kg																
Naphthalene	561	22000	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
2-Methylnaphthalene	200		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
1-Methylnaphthalene	na		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Acenaphthylene	200		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Acenpththene	300	41x10^6	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Fluorene	536	35x10^6	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Phenanthrene	1170		<8.9	<8.5	<8.7	<8.9	<7.6	**7.7**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Anthracene	845		<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Fluoranthene	2230	29x10^6	<8.9	<8.5	<8.7	<8.9	<7.6	**21**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Pyrene	1520	21x10^6	<8.9	<8.5	<8.7	<8.9	<7.6	**23**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(a)anthracene	1050	2700	<8.9	<8.5	<8.7	<8.9	<7.6	**10**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Chrysene	1290	270000	<8.9	<8.5	<8.7	<8.9	<7.6	**17**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(b)fluoranthene		2700	<8.9	<8.5	<8.7	<8.9	<7.6	**25**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(k)fluoranthene	13000	27000	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(a)pyrene	1450	270	<8.9	<8.5	<8.7	<8.9	<7.6	**20**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Ideno(1,2,3-c,d)pyrene	100	2700	<8.9	<8.5	<8.7	<8.9	<7.6	**17**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Dibenz(a,h)anthracene	1300	270	<8.9	<8.5	<8.7	<8.9	<7.6	<7.4	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1
Benzo(g,h,i)perylene	300		<8.9	<8.5	<8.7	<8.9	<7.6	**23**	<8.2	<8.7	<8.4	<9	<8.7	<9.1	<9.3	<9	<9.1	<9.1

CHEMICALS	**Soil** SLV[1]	OCC RBC[2]	B-1-12	B-2-3	B-2-6	B-2-10	B3-S-04	B3-S-06	B3-S-09	B4-S-03	B4A-S-06	B4A-S-09	B-5-3	B-5-6	B-5-9.5	B-6-4	B-6-6	B-6-9
PETROLEUM HYDROCARBONS	ug/kg	ug/kg																
Diesel Range (NWTPH-Dx)							<28			<33				<34	<35			
Lube Oil Range (NWTPH-Dx)							<57			<65				<68	<69			
Gasoline (NWTPH-HCID)	$22x10^6$	$22x10^6$					$<23x 10^3$			$<26 x10^3$				<27	<28			
Diesel Fuel (NWTPH-HCID)	$70x10^6$	$70x10^6$					$<57 x10^3$			$<65 x10^3$				<68	<69			
Lube Oil (NWTPH-HCID)							$<110 x10^3$			$<130 x10^3$				<140	<140			
TPH-Gas (NWTPH-Gx)																		
Oil & Grease (EPA 1664)																		
OTHER ANALYSES																		
TOC (Standard Method)																		
% Moisture	25		22	23	25								23	27	28	26	27	27

Notes:

[1] *Screening Level Values (SLVs) for soil from DEQ JSCS Table 3-1, DEQ preferred screening value highlighted orange on the table.*

[2] *-DEQ Risk Based Concentrations (RBCs) for occupational exposure to soil, or if not available their EPA Regional Preliminary Remediation Goals (Sept 2008) for occupational worker noted by (a)*

[3] *Soil Boring number, with depth in feet depth below ground surface; example B-1-12 is soil sample from boring 1 taken from 12 feet depth below ground surface.*

Detected concentration below detection level (practical quantitation limit; PQL) noted as (<) with its respective PQL value.

***Bolded** values are concentrations detected above the respective PQL.*

Grey shaded cells are PQLs greater than JSCS SLV.

Yellow shaded cells are detected concentrations that exceed JSCS screening level values.

Blank cells under screening criteria indicates no criteria available and under sample numbers indicates not analyzed.

Appendix O

Laboratory Reports

NPDES 1200Z Permit, DEQ File No. 107179

2495 NW Nicolai Street, 2012-2014

Laboratory Analyses

Calbag Metals Company

2495 NW Nicolai Street, Portland, Oregon

NPDES 1200Z Permit (DEQ File No. 107179)

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Friday, December 7, 2012

Chuck Gleason
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater / 2012 1200Z

Enclosed are the results of analyses for work order A12K419, which was received by the laboratory on 11/19/2012 at 9:40:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

12232 S.W. Garden Place
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503-718-2323 Phone
503-718-0333 Fax

Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CP2111712G	A12K419-01	Water	11/17/12 13:09	11/19/12 09:40

Apex Laboratories

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Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

12232 S.W. Garden Place
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503-718-2323 Phone
503-718-0333 Fax

Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625 Modified

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP2111712G (A12K419-01)			**Matrix: Water**		**Batch: 1211560**			
2,4-Dinitrotoluene	ND	---	0.00236	mg/L	1	11/21/12 17:36	EPA 625M	
Nitrobenzene	ND	---	0.000472	"	"	"	"	
Surrogate: 2-Fluorophenol (Surr)			*Recovery: 61 %*	*Limits: 20-110 %*	"	"	"	
Phenol-d6 (Surr)			*38 %*	*Limits: 10-110 %*	"	"	"	*Q-23*
Nitrobenzene-d5 (Surr)			*98 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*78 %*	*Limits: 45-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*108 %*	*Limits: 40-125 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*100 %*	*Limits: 30-120 %*	"	"	"	

Apex Laboratories

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Brian Cone, Industrial Services Manager

Apex Labs

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP2111712G (A12K419-01)			**Matrix: Water**		**Batch: 1211560**			
Acenaphthene	ND	---	0.000236	mg/L	1	11/21/12 17:36	EPA 625	Q-30
Anthracene	ND	---	0.000236	"	"	"	"	
Benz(a)anthracene	ND	---	0.000236	"	"	"	"	
Benzo(a)pyrene	ND	---	0.000236	"	"	"	"	
Benzo(b)fluoranthene	ND	---	0.000236	"	"	"	"	
Benzo(k)fluoranthene	ND	---	0.000236	"	"	"	"	
Chrysene	ND	---	0.000236	"	"	"	"	
Dibenz(a,h)anthracene	ND	---	0.000236	"	"	"	"	
Fluoranthene	ND	---	0.000236	"	"	"	"	
Fluorene	ND	---	0.000236	"	"	"	"	Q-30
Indeno(1,2,3-cd)pyrene	ND	---	0.000236	"	"	"	"	
Pyrene	ND	---	0.000236	"	"	"	"	
Pentachlorophenol (PCP)	ND	---	0.000943	"	"	"	"	
Surrogate: 2-Fluorobiphenyl (Surr)			*Recovery: 78 %*	*Limits: 45-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*100 %*	*Limits: 30-125 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*108 %*	*Limits: 35-125 %*	"	"	"	

Apex Laboratories

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP2111712G (A12K419-01)			**Matrix: Water**					
Batch: 1211732								
Aluminum	**0.407**	---	0.0500	mg/L	1	11/30/12 17:18	EPA 200.8	
Arsenic	ND	---	0.00200	"	"	"	"	
Cadmium	ND	---	0.00100	"	"	"	"	
Chromium	ND	---	0.00200	"	"	"	"	
Copper	**0.0157**	---	0.00200	"	"	"	"	
Iron	**0.611**	---	0.200	"	"	"	"	
Lead	**0.00399**	---	0.00100	"	"	"	"	
Mercury	ND	---	0.0000800	"	"	"	"	
Molybdenum	ND	---	0.00200	"	"	"	"	
Nickel	**0.00312**	---	0.00200	"	"	"	"	
Selenium	ND	---	0.00200	"	"	"	"	
Silver	ND	---	0.00100	"	"	"	"	
Zinc	**0.00691**	---	0.00400	"	"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP2111712G (A12K419-01)			**Matrix: Water**					
Batch: 1211477								
Total Suspended Solids	**5.00**	---	5.00	mg/L	1	11/20/12 10:42	SM 2540 D	
Batch: 1211484								
pH	**6.79**	---		pH Units	"	11/19/12 13:44	EPA 150.1	H-06
pH Temperature (deg C)	**20.9**	---		"	"	"	"	H-06
Batch: 1211527								
Chemical Oxygen Demand	ND	---	10.0	mg/L	"	11/20/12 16:33	EPA 410.4	
Batch: 1211637								
HEM (Oil and Grease)	ND	---	4.72	"	"	11/28/12 11:07	EPA 1664	O-01

Apex Laboratories

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

Weck Laboratories, Inc

ANALYTICAL SAMPLE RESULTS (Subcontracted)

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP2111712G (A12K419-01)			**Matrix: Water**		**Batch: W2K1038**			
Batch: W2K1038								
4,4´-DDE	ND	0.0000025	0.0000050	mg/l	1	12/04/12 03:14	EPA 608	
4,4´-DDT	ND	0.0000031	0.0000050	"	"	"	"	
Aldrin	ND	0.0000015	0.0000050	"	"	"	"	
Dieldrin	ND	0.0000021	0.0000050	"	"	"	"	
Aroclor 1016	ND	0.000050	0.00010	"	"	"	"	
Aroclor 1221	ND	0.000060	0.00010	"	"	"	"	
Aroclor 1232	ND	0.00010	0.00010	"	"	"	"	
Aroclor 1242	ND	0.000070	0.00010	"	"	"	"	
Aroclor 1248	ND	0.000060	0.00010	"	"	"	"	
Aroclor 1254	ND	0.000040	0.00010	"	"	"	"	
Aroclor 1260	ND	0.000040	0.00010	"	"	"	"	
Chlordane (tech)	ND	0.000050	0.00010	"	"	"	"	
Batch: W2K1038								
Surrogate: Tetrachloro-meta-xylene		*Recovery: 45 %*		*Limits: 26-131 %*	"	"	"	
Decachlorobiphenyl		*47 %*		*Limits: 0.1-154 %*	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625 Modified

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211560 - EPA 3510C (Acid Extraction)							**Water**					
Blank (1211560-BLK1)					Prepared: 11/21/12 08:19	Analyzed: 11/21/12 15:48						
EPA 625M												
2,4-Dinitrotoluene	ND	---	0.00227	mg/L	1	---	---	---	---	---	---	
Nitrobenzene	ND	---	0.000455	"	"	---	---	---	---	---	---	
Surr: 2-Fluorophenol (Surr)		*Recovery:*	*64 %*	*Limits:*	*20-110 %*	*Dilution:*	*1x*					
Phenol-d6 (Surr)			*43 %*		*10-110 %*		*"*					*Q-23*
Nitrobenzene-d5 (Surr)			*102 %*		*35-120 %*		*"*					
2-Fluorobiphenyl (Surr)			*81 %*		*45-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*106 %*		*40-125 %*		*"*					
p-Terphenyl-d14 (Surr)			*113 %*		*30-120 %*		*"*					
LCS (1211560-BS1)					Prepared: 11/21/12 08:19	Analyzed: 11/21/12 16:24						
EPA 625M												
2,4-Dinitrotoluene	0.00770	---	0.00250	mg/L	1	0.00800	---	96	40-125%	---	---	
Nitrobenzene	0.00550	---	0.000500	"	"	"	---	69	"	---	---	
Surr: 2-Fluorophenol (Surr)		*Recovery:*	*64 %*	*Limits:*	*20-110 %*	*Dilution:*	*1x*					
Phenol-d6 (Surr)			*41 %*		*10-110 %*		*"*					*Q-23*
Nitrobenzene-d5 (Surr)			*96 %*		*35-120 %*		*"*					
2-Fluorobiphenyl (Surr)			*77 %*		*45-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*110 %*		*40-125 %*		*"*					
p-Terphenyl-d14 (Surr)			*111 %*		*30-120 %*		*"*					
LCS Dup (1211560-BSD1)					Prepared: 11/21/12 08:19	Analyzed: 11/21/12 17:00						**Q-19**
EPA 625M												
2,4-Dinitrotoluene	0.00823	---	0.00250	mg/L	1	0.00800	---	103	40-125%	7	30%	
Nitrobenzene	0.00700	---	0.000500	"	"	"	---	88	"	24	30%	
Surr: 2-Fluorophenol (Surr)		*Recovery:*	*67 %*	*Limits:*	*20-110 %*	*Dilution:*	*1x*					
Phenol-d6 (Surr)			*43 %*		*10-110 %*		*"*					*Q-23*
Nitrobenzene-d5 (Surr)			*102 %*		*35-120 %*		*"*					
2-Fluorobiphenyl (Surr)			*81 %*		*45-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*114 %*		*40-125 %*		*"*					
p-Terphenyl-d14 (Surr)			*112 %*		*30-120 %*		*"*					

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211560 - EPA 3510C (Acid Extraction)							**Water**					
Blank (1211560-BLK1)						Prepared: 11/21/12 08:19	Analyzed: 11/21/12 15:48					
EPA 625												
Acenaphthene	ND	---	0.000227	mg/L	1	---	---	---	---	---	---	Q-30
Anthracene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Chrysene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Fluoranthene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Fluorene	ND	---	0.000227	"	"	---	---	---	---	---	---	Q-30
Indeno(1,2,3-cd)pyrene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Pyrene	ND	---	0.000227	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	---	0.000909	"	"	---	---	---	---	---	---	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 81 %*	*Limits: 45-120 %*		*Dilution: 1x*						
p-Terphenyl-d14 (Surr)			*113 %*	*30-125 %*		*"*						
2,4,6-Tribromophenol (Surr)			*106 %*	*35-125 %*		*"*						
LCS (1211560-BS1)						Prepared: 11/21/12 08:19	Analyzed: 11/21/12 16:24					
EPA 625												
Acenaphthene	0.00215	---	0.000250	mg/L	1	0.00800	---	27	47-145%	---	---	Q-30
Anthracene	0.00687	---	0.000250	"	"	"	---	86	27-133%	---	---	
Benz(a)anthracene	0.00840	---	0.000250	"	"	"	---	105	33-143%	---	---	
Benzo(a)pyrene	0.00908	---	0.000250	"	"	"	---	113	17-163%	---	---	
Benzo(b)fluoranthene	0.00926	---	0.000250	"	"	"	---	116	24-159%	---	---	
Benzo(k)fluoranthene	0.00847	---	0.000250	"	"	"	---	106	11-162%	---	---	
Chrysene	0.00832	---	0.000250	"	"	"	---	104	17-168%	---	---	
Dibenz(a,h)anthracene	0.00887	---	0.000250	"	"	"	---	111	1-227%	---	---	
Fluoranthene	0.00827	---	0.000250	"	"	"	---	103	26-137%	---	---	
Fluorene	0.00358	---	0.000250	"	"	"	---	45	59-121%	---	---	Q-30
Indeno(1,2,3-cd)pyrene	0.00835	---	0.000250	"	"	"	---	104	1-171%	---	---	
Pyrene	0.00811	---	0.000250	"	"	"	---	101	52-115%	---	---	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211560 - EPA 3510C (Acid Extraction)							**Water**					
LCS (1211560-BS1)						Prepared: 11/21/12 08:19	Analyzed: 11/21/12 16:24					
Pentachlorophenol (PCP)	0.00752	---	0.00100	mg/L	"	"	---	94	14-176%	---	---	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 77 %*	*Limits: 45-120 %*			*Dilution: 1x*					
p-Terphenyl-d14 (Surr)			*111 %*	*30-125 %*			*"*					
2,4,6-Tribromophenol (Surr)			*110 %*	*35-125 %*			*"*					
LCS Dup (1211560-BSD1)						Prepared: 11/21/12 08:19	Analyzed: 11/21/12 17:00					**Q-19**
EPA 625												
Acenaphthene	0.00386	---	0.000250	mg/L	1	0.00800	---	48	47-145%	57	30%	Q-01
Anthracene	0.00775	---	0.000250	"	"	"	---	97	27-133%	12	30%	
Benz(a)anthracene	0.00857	---	0.000250	"	"	"	---	107	33-143%	2	30%	
Benzo(a)pyrene	0.00910	---	0.000250	"	"	"	---	114	17-163%	0.3	30%	
Benzo(b)fluoranthene	0.00932	---	0.000250	"	"	"	---	117	24-159%	0.7	30%	
Benzo(k)fluoranthene	0.00864	---	0.000250	"	"	"	---	108	11-162%	2	30%	
Chrysene	0.00853	---	0.000250	"	"	"	---	107	17-168%	2	30%	
Dibenz(a,h)anthracene	0.00910	---	0.000250	"	"	"	---	114	1-227%	3	30%	
Fluoranthene	0.00866	---	0.000250	"	"	"	---	108	26-137%	5	30%	
Fluorene	0.00541	---	0.000250	"	"	"	---	68	59-121%	41	30%	Q-01
Indeno(1,2,3-cd)pyrene	0.00848	---	0.000250	"	"	"	---	106	1-171%	2	30%	
Pyrene	0.00841	---	0.000250	"	"	"	---	105	52-115%	4	30%	
Pentachlorophenol (PCP)	0.00792	---	0.00100	"	"	"	---	99	14-176%	5	30%	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 81 %*	*Limits: 45-120 %*			*Dilution: 1x*					
p-Terphenyl-d14 (Surr)			*112 %*	*30-125 %*			*"*					
2,4,6-Tribromophenol (Surr)			*114 %*	*35-125 %*			*"*					

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211732 - EPA 3015A							**Water**					
Blank (1211732-BLK1)						Prepared: 11/30/12 12:15	Analyzed: 11/30/12 17:03					
EPA 200.8												
Aluminum	ND	---	0.0500	mg/L	1	---	---	---	---	---	---	
Arsenic	ND	---	0.00200	"	"	---	---	---	---	---	---	
Cadmium	ND	---	0.00100	"	"	---	---	---	---	---	---	
Chromium	ND	---	0.00200	"	"	---	---	---	---	---	---	
Copper	ND	---	0.00200	"	"	---	---	---	---	---	---	
Iron	ND	---	0.200	"	"	---	---	---	---	---	---	
Lead	ND	---	0.00100	"	"	---	---	---	---	---	---	
Mercury	ND	---	0.0000800	"	"	---	---	---	---	---	---	
Molybdenum	ND	---	0.00200	"	"	---	---	---	---	---	---	
Nickel	ND	---	0.00200	"	"	---	---	---	---	---	---	
Selenium	ND	---	0.00200	"	"	---	---	---	---	---	---	
Silver	ND	---	0.00100	"	"	---	---	---	---	---	---	
Zinc	ND	---	0.00400	"	"	---	---	---	---	---	---	
LCS (1211732-BS1)						Prepared: 11/30/12 12:15	Analyzed: 11/30/12 17:06					
EPA 200.8												
Aluminum	5.30	---	0.0500	mg/L	1	5.56	---	95	85-115%	---	---	
Arsenic	0.0547	---	0.00200	"	"	0.0556	---	98	"	---	---	
Cadmium	0.0545	---	0.00100	"	"	"	---	98	"	---	---	
Chromium	0.0545	---	0.00200	"	"	"	---	98	"	---	---	
Copper	0.0559	---	0.00200	"	"	"	---	101	"	---	---	
Iron	5.55	---	0.200	"	"	5.56	---	100	"	---	---	
Lead	0.0563	---	0.00100	"	"	0.0556	---	101	"	---	---	
Mercury	0.00115	---	0.0000800	"	"	0.00111	---	103	"	---	---	Q-23
Molybdenum	0.0285	---	0.00200	"	"	0.0278	---	103	"	---	---	
Nickel	0.0555	---	0.00200	"	"	0.0556	---	100	"	---	---	
Selenium	0.0285	---	0.00200	"	"	0.0278	---	102	"	---	---	
Silver	0.0278	---	0.00100	"	"	"	---	100	"	---	---	
Zinc	0.0537	---	0.00400	"	"	0.0556	---	97	"	---	---	
Duplicate (1211732-DUP1)						Prepared: 11/30/12 12:15	Analyzed: 11/30/12 17:22					

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211732 - EPA 3015A							Water					
Duplicate (1211732-DUP1)						Prepared: 11/30/12 12:15 Analyzed: 11/30/12 17:22						
QC Source Sample: CP2111712G (A12K419-01)												
EPA 200.8												
Aluminum	**0.470**	---	0.0500	mg/L	1	---	0.407	---	---	14	20%	
Arsenic	ND	---	0.00200	"	"	---	ND	---	---	---	20%	
Cadmium	ND	---	0.00100	"	"	---	ND	---	---	---	20%	
Chromium	ND	---	0.00200	"	"	---	0.000822	---	---	***	20%	
Copper	**0.0154**	---	0.00200	"	"	---	0.0157	---	---	2	20%	
Iron	**0.652**	---	0.200	"	"	---	0.611	---	---	6	20%	
Lead	**0.00392**	---	0.00100	"	"	---	0.00399	---	---	2	20%	
Mercury	ND	---	0.0000800	"	"	---	ND	---	---	---	20%	
Molybdenum	ND	---	0.00200	"	"	---	ND	---	---	---	20%	
Nickel	**0.00316**	---	0.00200	"	"	---	0.00312	---	---	1	20%	
Selenium	ND	---	0.00200	"	"	---	ND	---	---	---	20%	
Silver	ND	---	0.00100	"	"	---	ND	---	---	---	20%	
Zinc	**0.00672**	---	0.00400	"	"	---	0.00691	---	---	3	20%	
Matrix Spike (1211732-MS1)						Prepared: 11/30/12 12:15 Analyzed: 11/30/12 17:25						
QC Source Sample: CP2111712G (A12K419-01)												
EPA 200.8												
Aluminum	5.90	---	0.0500	mg/L	1	5.56	0.407	99	70-130%	---	---	
Arsenic	0.0558	---	0.00200	"	"	0.0556	ND	101	"	---	---	
Cadmium	0.0557	---	0.00100	"	"	"	ND	100	"	---	---	
Chromium	0.0555	---	0.00200	"	"	"	0.000822	98	"	---	---	
Copper	0.0690	---	0.00200	"	"	"	0.0157	96	"	---	---	
Iron	6.33	---	0.200	"	"	5.56	0.611	103	"	---	---	
Lead	0.0602	---	0.00100	"	"	0.0556	0.00399	101	"	---	---	
Mercury	0.00115	---	0.0000800	"	"	0.00111	ND	104	"	---	---	Q-23
Molybdenum	0.0292	---	0.00200	"	"	0.0278	ND	105	"	---	---	
Nickel	0.0576	---	0.00200	"	"	0.0556	0.00312	98	"	---	---	
Selenium	0.0285	---	0.00200	"	"	0.0278	ND	103	"	---	---	
Silver	0.0280	---	0.00100	"	"	"	ND	101	"	---	---	

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211732 - EPA 3015A							**Water**					
Matrix Spike (1211732-MS1)						Prepared: 11/30/12 12:15	Analyzed: 11/30/12 17:25					
QC Source Sample: CP2111712G (A12K419-01)												
Zinc	0.0608	---	0.00400	mg/L	"	0.0556	0.00691	97	"	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211477 - Total Suspended Solids							**Water**					
Blank (1211477-BLK1)						Prepared: 11/19/12 10:50	Analyzed: 11/20/12 10:42					
SM 2540 D												
Total Suspended Solids	ND	---	2.00	mg/L	1	---	---	---	---	---	---	
Reference (1211477-SRM1)						Prepared: 11/19/12 10:50	Analyzed: 11/20/12 10:42					
SM 2540 D												
Total Suspended Solids	92.0	---		mg/L	1	100		92	90-110%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211484 - Method Prep: Aq						**Water**						
Reference (1211484-SRM1)					Prepared: 11/19/12 10:54		Analyzed: 11/19/12 13:33					
EPA 150.1												
pH	6.06	---		pH Units	1	6.00		101	98.4-101.7%	---	---	
Reference (1211484-SRM2)					Prepared: 11/19/12 10:54		Analyzed: 11/19/12 13:50					
EPA 150.1												
pH	7.96	---		pH Units	1	8.00		100	98.74-101.26%	---	---	
Reference (1211484-SRM3)					Prepared: 11/19/12 14:06		Analyzed: 11/19/12 14:06					
EPA 150.1												
pH	7.97	---		pH Units	1	8.00		100	98.74-101.26%	---	---	
Reference (1211484-SRM4)					Prepared: 11/19/12 14:06		Analyzed: 11/19/12 14:14					
EPA 150.1												
pH	6.09	---		pH Units	1	6.00		102	98.4-101.7%	---	---	
Reference (1211484-SRM5)					Prepared: 11/19/12 16:08		Analyzed: 11/19/12 16:44					
EPA 150.1												
pH	7.95	---		pH Units	1	8.00		99	98.74-101.26%	---	---	
Reference (1211484-SRM6)					Prepared: 11/19/12 16:08		Analyzed: 11/19/12 17:02					
EPA 150.1												
pH	6.09	---		pH Units	1	6.00		102	98.4-101.7%	---	---	
Reference (1211484-SRM7)					Prepared: 11/19/12 16:08		Analyzed: 11/19/12 17:07					
EPA 150.1												
pH	7.95	---		pH Units	1	8.00		99	98.74-101.26%	---	---	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211527 - Method Prep: Aq							**Water**					
Blank (1211527-BLK1)						Prepared: 11/20/12 10:28	Analyzed: 11/20/12 16:33					
EPA 410.4												
Chemical Oxygen Demand	ND	---	10.0	mg/L	1	---	---	---	---	---	---	
LCS (1211527-BS1)						Prepared: 11/20/12 10:28	Analyzed: 11/20/12 16:33					
EPA 410.4												
Chemical Oxygen Demand	54.4	---	10.0	mg/L	1	50.0	---	109	90-110%	---	---	
Duplicate (1211527-DUP1)						Prepared: 11/20/12 10:28	Analyzed: 11/20/12 16:33					
QC Source Sample: CP2111712G (A12K419-01)												
EPA 410.4												
Chemical Oxygen Demand	ND	---	10.0	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (1211527-MS1)						Prepared: 11/20/12 10:28	Analyzed: 11/20/12 16:33					
QC Source Sample: CP2111712G (A12K419-01)												
EPA 410.4												
Chemical Oxygen Demand	63.4	---	11.1	mg/L	1	55.6	ND	114	90-110%	---	---	Q-01

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1211637 - EPA 1664							**Water**					
Blank (1211637-BLK1)						Prepared: 11/27/12 10:45	Analyzed: 11/28/12 11:07					
EPA 1664												
HEM (Oil and Grease)	ND	---	4.55	mg/L	1	---	---	---	---	---	---	
LCS (1211637-BS1)						Prepared: 11/27/12 10:45	Analyzed: 11/28/12 11:07					
EPA 1664												
HEM (Oil and Grease)	40.1	---		mg/L	1	40.0	---	100	78-114%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	Stormwater	
PO Box 10067	Project Number:	2012 1200Z	Reported:
Portland, OR 97296	Project Manager:	Chuck Gleason	12/07/12 14:59

Weck Laboratories, Inc

QUALITY CONTROL (QC) SAMPLE RESULTS

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch W2K1038 - EPA 3510C/L-L Ext.							**Water**					
Blank (W2K1038-BLK1)						Prepared: 11/21/12 14:06 Analyzed: 12/03/12 17:18						
EPA 608												
4,4´-DDE	ND	0.0000025	0.0000050	mg/l	1	---	---	---	---	---	---	
4,4´-DDT	ND	0.0000031	0.0000050	"	"	---	---	---	---	---	---	
Aldrin	ND	0.0000015	0.0000050	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.0000021	0.0000050	"	"	---	---	---	---	---	---	
Aroclor 1016	ND	0.000050	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1221	ND	0.000060	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00010	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.000070	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.000060	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.000040	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.000040	0.00010	"	"	---	---	---	---	---	---	
Surr: Tetrachloro-meta-xylene		*Recovery:*	*42 %*	*Limits:*	*26-131 %*		*Dilution: 1x*					
Decachlorobiphenyl			*58 %*		*0.1-154 %*		*"*					
LCS (W2K1038-BS1)						Prepared: 11/21/12 14:06 Analyzed: 12/03/12 17:47						
EPA 608												
4,4´-DDD	0.000103	0.0000030	0.0000050	mg/l	1	0.000100	---	103	30-141%	---	---	
4,4´-DDE	0.0000785	0.0000025	0.0000050	"	"	"	---	78	30-145%	---	---	
4,4´-DDT	0.0000729	0.0000031	0.0000050	"	"	"	---	73	25-160%	---	---	
Aldrin	0.0000531	0.0000015	0.0000050	"	"	"	---	53	42-122%	---	---	
alpha-BHC	0.0000738	0.0000018	0.0000050	"	"	"	---	74	37-134%	---	---	
beta-BHC	0.0000827	0.0000031	0.0000050	"	"	"	---	83	14-147%	---	---	
delta-BHC	0.0000834	0.0000025	0.0000050	"	"	"	---	83	19-140%	---	---	
gamma-BHC (Lindane)	0.0000730	0.0000021	0.0000050	"	"	"	---	73	32-127%	---	---	
alpha-Chlordane	0.0000568	0.0000050	0.0000050	"	"	"	---	57	50-150%	---	---	
gamma-Chlordane	0.0000680	0.0000050	0.0000050	"	"	"	---	68	"	---	---	
Dieldrin	0.0000798	0.0000021	0.0000050	"	"	"	---	80	36-146%	---	---	
Endosulfan sulfate	0.0000928	0.0000050	0.0000050	"	"	"	---	93	26-144%	---	---	
Endosulfan I	0.0000583	0.0000017	0.0000050	"	"	"	---	58	45-153%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

Weck Laboratories, Inc

QUALITY CONTROL (QC) SAMPLE RESULTS

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch W2K1038 - EPA 3510C/L-L Ext.							**Water**					
LCS (W2K1038-BS1)					Prepared: 11/21/12 14:06		Analyzed: 12/03/12 17:47					
Endosulfan II	0.0000796	0.0000019	0.0000050	mg/l	"	"	---	80	2-202%	---	---	
Endrin	0.000103	0.0000028	0.0000050	"	"	"	---	103	30-147%	---	---	
Endrin aldehyde	0.0000761	0.0000030	0.0000050	"	"	"	---	76	41-203%	---	---	
Heptachlor	0.0000755	0.0000017	0.0000050	"	"	"	---	76	34-111%	---	---	
Heptachlor epoxide	0.0000739	0.0000019	0.0000050	"	"	"	---	74	37-142%	---	---	
Surr: Tetrachloro-meta-xylene		*Recovery:*	*28 %*	*Limits:*	*26-131 %*		*Dilution: 1x*					
Decachlorobiphenyl			*58 %*		*0.1-154 %*		*"*					
LCS Dup (W2K1038-BSD1)					Prepared: 11/21/12 14:06		Analyzed: 12/03/12 18:15					
EPA 608												
4,4´-DDD	0.000114	0.0000030	0.0000050	mg/l	1	0.000100	---	114	30-141%	10	30%	
4,4´-DDE	0.0000793	0.0000025	0.0000050	"	"	"	---	79	30-145%	1	30%	
4,4´-DDT	0.0000819	0.0000031	0.0000050	"	"	"	---	82	25-160%	12	30%	
Aldrin	0.0000637	0.0000015	0.0000050	"	"	"	---	64	42-122%	18	30%	
alpha-BHC	0.0000846	0.0000018	0.0000050	"	"	"	---	85	37-134%	14	30%	
beta-BHC	0.0000908	0.0000031	0.0000050	"	"	"	---	91	14-147%	9	30%	
delta-BHC	0.0000962	0.0000025	0.0000050	"	"	"	---	96	19-140%	14	30%	
gamma-BHC (Lindane)	0.0000845	0.0000021	0.0000050	"	"	"	---	85	32-127%	15	30%	
alpha-Chlordane	0.0000633	0.0000050	0.0000050	"	"	"	---	63	50-150%	11	30%	
gamma-Chlordane	0.0000753	0.0000050	0.0000050	"	"	"	---	75	"	10	30%	
Dieldrin	0.0000819	0.0000021	0.0000050	"	"	"	---	82	36-146%	3	30%	
Endosulfan sulfate	0.000102	0.0000050	0.0000050	"	"	"	---	102	26-144%	9	30%	
Endosulfan I	0.0000639	0.0000017	0.0000050	"	"	"	---	64	45-153%	9	30%	
Endosulfan II	0.0000881	0.0000019	0.0000050	"	"	"	---	88	2-202%	10	30%	
Endrin	0.000115	0.0000028	0.0000050	"	"	"	---	115	30-147%	11	30%	
Endrin aldehyde	0.0000904	0.0000030	0.0000050	"	"	"	---	90	41-203%	17	30%	
Heptachlor	0.0000883	0.0000017	0.0000050	"	"	"	---	88	34-111%	16	30%	
Heptachlor epoxide	0.0000895	0.0000019	0.0000050	"	"	"	---	90	37-142%	19	30%	
Surr: Tetrachloro-meta-xylene		*Recovery:*	*48 %*	*Limits:*	*26-131 %*		*Dilution: 1x*					
Decachlorobiphenyl			*59 %*		*0.1-154 %*		*"*					

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Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

Weck Laboratories, Inc

QUALITY CONTROL (QC) SAMPLE RESULTS

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch W2K1038 - EPA 3510C/L-L Ext.							**Water**					

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

Notes and Definitions

Qualifiers:

H-06	This sample was received, or the analysis requested, outside the recommended holding time.
O-01	Result for total Hexane Extractable Material (HEM) is below reporting level for this sample. Silica Gel Treatment (HEM-SGT) analysis was therefore not performed.
Q-01	Percent recovery and/or RPD is outside acceptance limits.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-23	Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Data is likely biased high.
Q-30	Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Brian L Cone

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	12/07/12 14:59

APEX LABS — **CHAIN OF CUSTODY** — Lab # A1J0419 COC ___ of ___

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals | Project Mgr: B. Cone / C. Gleason | Project Name: 2012 1200Z | Project #:

Address: PO Box 10067, Portland, OR 97296 | Phone: 503 226 3441 | Fax: | Email: chuck@calbag.com

Sampled by:

Site Location: OR WA Other: ____

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200-COLS	1200-Z	TSS	O&G	COD	
1	CP2111712G		11/17	1309	W	11									✓				✓		✓	✓	✓	✓	✓
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
Please call Scott at 503 567 9567 to confirm analytes.

Aldrin
DDT
DDT metabolite (DDE)
Dieldrin
PCP
PAH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 11/19/12	Signature: [signature] Date: 11-19-12	Signature: Date:	Signature: Date:
Printed Name: Scott A. de Ridder Time: 0940	Printed Name: Kendra Hinckley Time: 940	Printed Name: Time:	Printed Name: Time:
Company: Stormwater Management Services	Company: Apex	Company:	Company:

Apex Laboratories

Brian Cone, Industrial Services Manager

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Thursday, February 7, 2013

Chuck Gleason
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater / 2012 1200Z

Enclosed are the results of analyses for work order A12L231, which was received by the laboratory on 12/12/2012 at 10:00:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories

Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CP1 121112C	A12L231-01	Water	12/11/12 14:53	12/12/12 10:00
CP1 121112G	A12L231-02	Water	12/11/12 14:53	12/12/12 10:00

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

ANALYTICAL CASE NARRATIVE

Work Order: A12L231

Amended Report:

Method detection limits:

The final report has been amended to include the Method Detection Limits for Semivolatile Organic Compounds by EPA Method 625.

Brian Cone
Industrial Program Manager
2/7/13

Apex Labs

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP1 121112G (A12L231-02RE2)			**Matrix: Water**		**Batch: 1212365**			
Acenaphthene	ND	0.000735	0.00147	mg/L	3	12/20/12 10:32	EPA 625	
Anthracene	ND	0.000735	0.00147	"	"	"	"	
Benz(a)anthracene	ND	0.000735	0.00147	"	"	"	"	
Benzo(a)pyrene	ND	0.000735	0.00147	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000735	0.00147	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000735	0.00147	"	"	"	"	
Butyl benzyl phthalate	ND	0.00147	0.00294	"	"	"	"	
Chrysene	ND	0.000735	0.00147	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000735	0.00147	"	"	"	"	
Diethylphthalate	ND	0.00147	0.00294	"	"	"	"	
Dimethylphthalate	ND	0.00147	0.00294	"	"	"	"	
Di-n-butylphthalate	ND	0.00147	0.00294	"	"	"	"	
Di-n-octyl phthalate	ND	0.00176	0.00353	"	"	"	"	
Fluoranthene	ND	0.000735	0.00147	"	"	"	"	
Fluorene	ND	0.000735	0.00147	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.000735	0.00147	"	"	"	"	
Pentachlorophenol (PCP)	**0.00136**	0.00118	0.00235	"	"	"	"	Ja
Pyrene	ND	0.000735	0.00147	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 88 %*	*Limits: 35-120 %*	"	"	"	*Q-23*
2-Fluorobiphenyl (Surr)			*87 %*	*Limits: 45-120 %*	"	"	"	
Phenol-d6 (Surr)			*33 %*	*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*107 %*	*Limits: 30-125 %*	"	"	"	
2-Fluorophenol (Surr)			*50 %*	*Limits: 20-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*126 %*	*Limits: 35-125 %*	"	"	"	*S-06*

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP1 121112G (A12L231-02)			**Matrix: Water**					
Batch: 1212486								
Aluminum	**1.36**	---	0.0500	mg/L	1	12/26/12 15:54	EPA 200.8	
Cadmium	**0.00130**	---	0.00100	"	"	"	"	
Chromium	**0.00802**	---	0.00200	"	"	"	"	
Copper	**0.130**	---	0.00200	"	"	"	"	
Iron	**3.02**	---	0.0500	"	"	"	"	
Lead	**0.0621**	---	0.00100	"	"	"	"	
Mercury	**0.000169**	---	0.0000800	"	"	"	"	
Nickel	**0.0257**	---	0.00200	"	"	"	"	
Zinc	**0.129**	---	0.00400	"	"	"	"	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	02/07/13 16:33

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP1 121112C (A12L231-01)			**Matrix: Water**					
Batch: 1212439								
HEM (Oil and Grease)	ND	---	4.85	mg/L	1	12/21/12 17:52	EPA 1664	O-01
CP1 121112G (A12L231-02)			**Matrix: Water**					
Batch: 1212261								
Chemical Oxygen Demand	**37.4**	---	10.0	mg/L	1	12/13/12 11:22	EPA 410.4	
Batch: 1212277								
Total Suspended Solids	**19.0**	---	5.00	"	"	12/14/12 13:45	SM 2540 D	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

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ANALYTICAL SAMPLE RESULTS (Subcontracted)

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
CP1 121112G (A12L231-02)			**Matrix: Water**		**Batch: W2L0750**			
Batch: W2L0750								
4,4´-DDE	ND	0.0000025	0.0000050	mg/l	1	12/19/12 15:13	EPA 608	
4,4´-DDT	ND	0.0000031	0.0000050	"	"	"	"	
Aldrin	ND	0.0000015	0.0000050	"	"	"	"	
Dieldrin	ND	0.0000021	0.0000050	"	"	"	"	
Aroclor 1016	**0.00020**	0.000050	0.00010	"	"	"	"	
Aroclor 1221	ND	0.000060	0.00010	"	"	"	"	
Aroclor 1232	ND	0.00010	0.00010	"	"	"	"	
Aroclor 1242	ND	0.000070	0.00010	"	"	"	"	
Aroclor 1248	ND	0.000060	0.00010	"	"	"	"	
Aroclor 1254	ND	0.000040	0.00010	"	"	"	"	
Aroclor 1260	**0.000048**	0.000040	0.00010	"	"	"	"	J
Batch: W2L0750								
Surrogate: Tetrachloro-meta-xylene		*Recovery: 84 %*	*Limits: 26-131 %*		"	"	"	
Decachlorobiphenyl		*85 %*	*Limits: 0.1-154 %*		"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	Stormwater	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212365 - EPA 3510C (Acid/Base Neutral)							**Water**					
Blank (1212365-BLK1)						Prepared: 12/18/12 09:31	Analyzed: 12/18/12 17:43					
EPA 625												
Acenaphthene	ND	0.000227	0.000455	mg/L	1	---	---	---	---	---	---	
Anthracene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	0.000455	0.000909	"	"	---	---	---	---	---	---	
Chrysene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	0.000455	0.000909	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	0.000455	0.000909	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	0.000455	0.000909	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	0.000545	0.00109	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Fluorene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.000364	0.000727	"	"	---	---	---	---	---	---	
Pyrene	ND	0.000227	0.000455	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*104 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					*Q-23*
2-Fluorobiphenyl (Surr)			*93 %*		*45-120 %*		*"*					
Phenol-d6 (Surr)			*40 %*		*10-120 %*		*"*					*Q-23*
p-Terphenyl-d14 (Surr)			*110 %*		*30-125 %*		*"*					
2-Fluorophenol (Surr)			*59 %*		*20-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*106 %*		*35-125 %*		*"*					
LCS (1212365-BS1)						Prepared: 12/18/12 09:31	Analyzed: 12/18/12 18:20					
EPA 625												
Acenaphthene	0.00697	0.000250	0.000500	mg/L	1	0.00800	---	87	47-145%	---	---	
Anthracene	0.00834	0.000250	0.000500	"	"	"	---	104	27-133%	---	---	
Benz(a)anthracene	0.00846	0.000250	0.000500	"	"	"	---	106	33-143%	---	---	
Benzo(a)pyrene	0.00950	0.000250	0.000500	"	"	"	---	119	17-163%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212365 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS (1212365-BS1)				Prepared: 12/18/12 09:31		Analyzed: 12/18/12 18:20						
Benzo(b)fluoranthene	0.00893	0.000250	0.000500	mg/L	"	"	---	112	24-159%	---	---	
Benzo(k)fluoranthene	0.00937	0.000250	0.000500	"	"	"	---	117	11-162%	---	---	
Butyl benzyl phthalate	0.00860	0.000500	0.00100	"	"	"	---	108	1-152%	---	---	
Chrysene	0.00844	0.000250	0.000500	"	"	"	---	106	17-168%	---	---	
Dibenz(a,h)anthracene	0.00863	0.000250	0.000500	"	"	"	---	108	1-227%	---	---	
Diethylphthalate	0.00840	0.000500	0.00100	"	"	"	---	105	1-114%	---	---	
Dimethylphthalate	0.00812	0.000500	0.00100	"	"	"	---	102	1-112%	---	---	
Di-n-butylphthalate	0.00971	0.000500	0.00100	"	"	"	---	121	1-118%	---	---	Q-29
Di-n-octyl phthalate	0.00860	0.000600	0.00120	"	"	"	---	107	4-146%	---	---	
Fluoranthene	0.00849	0.000250	0.000500	"	"	"	---	106	26-137%	---	---	
Fluorene	0.00770	0.000250	0.000500	"	"	"	---	96	59-121%	---	---	
Indeno(1,2,3-cd)pyrene	0.00830	0.000250	0.000500	"	"	"	---	104	1-171%	---	---	
Pentachlorophenol (PCP)	0.00805	0.000400	0.000800	"	"	"	---	101	14-176%	---	---	
Pyrene	0.00838	0.000250	0.000500	"	"	"	---	105	52-115%	---	---	

Surr:	Recovery:	Limits:	Dilution:	Notes
Nitrobenzene-d5 (Surr)	*101 %*	*35-120 %*	*1x*	*Q-23*
2-Fluorobiphenyl (Surr)	*86 %*	*45-120 %*	*"*	
Phenol-d6 (Surr)	*41 %*	*10-120 %*	*"*	*Q-23*
p-Terphenyl-d14 (Surr)	*114 %*	*30-125 %*	*"*	
2-Fluorophenol (Surr)	*59 %*	*20-120 %*	*"*	
2,4,6-Tribromophenol (Surr)	*122 %*	*35-125 %*	*"*	

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (1212365-BSD1)				Prepared: 12/18/12 09:31		Analyzed: 12/18/12 18:55						**Q-19**
EPA 625												
Acenaphthene	0.00782	0.000250	0.000500	mg/L	1	0.00800	---	98	47-145%	11	30%	
Anthracene	0.00868	0.000250	0.000500	"	"	"	---	109	27-133%	4	30%	
Benz(a)anthracene	0.00872	0.000250	0.000500	"	"	"	---	109	33-143%	3	30%	
Benzo(a)pyrene	0.00970	0.000250	0.000500	"	"	"	---	121	17-163%	2	30%	
Benzo(b)fluoranthene	0.00936	0.000250	0.000500	"	"	"	---	117	24-159%	5	30%	
Benzo(k)fluoranthene	0.00968	0.000250	0.000500	"	"	"	---	121	11-162%	3	30%	
Butyl benzyl phthalate	0.00878	0.000500	0.00100	"	"	"	---	110	1-152%	2	30%	
Chrysene	0.00866	0.000250	0.000500	"	"	"	---	108	17-168%	3	30%	
Dibenz(a,h)anthracene	0.00889	0.000250	0.000500	"	"	"	---	111	1-227%	3	30%	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212365 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS Dup (1212365-BSD1)					Prepared: 12/18/12 09:31		Analyzed: 12/18/12 18:55					**Q-19**
Diethylphthalate	0.00882	0.000500	0.00100	mg/L	"	"	---	110	1-114%	5	30%	
Dimethylphthalate	0.00866	0.000500	0.00100	"	"	"	---	108	1-112%	6	30%	
Di-n-butylphthalate	0.0100	0.000500	0.00100	"	"	"	---	125	1-118%	3	30%	Q-29
Di-n-octyl phthalate	0.00887	0.000600	0.00120	"	"	"	---	111	4-146%	3	30%	
Fluoranthene	0.00881	0.000250	0.000500	"	"	"	---	110	26-137%	4	30%	
Fluorene	0.00835	0.000250	0.000500	"	"	"	---	104	59-121%	8	30%	
Indeno(1,2,3-cd)pyrene	0.00856	0.000250	0.000500	"	"	"	---	107	1-171%	3	30%	
Pentachlorophenol (PCP)	0.00846	0.000400	0.000800	"	"	"	---	106	14-176%	5	30%	
Pyrene	0.00868	0.000250	0.000500	"	"	"	---	109	52-115%	4	30%	

Surr:	Recovery:	Limits:	Dilution:
Nitrobenzene-d5 (Surr)	*105 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*99 %*	*45-120 %*	*"*
Phenol-d6 (Surr)	*43 %*	*10-120 %*	*"*
p-Terphenyl-d14 (Surr)	*113 %*	*30-125 %*	*"*
2-Fluorophenol (Surr)	*62 %*	*20-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*125 %*	*35-125 %*	*"*

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212486 - EPA 3015A							**Water**					
Blank (1212486-BLK1)					Prepared: 12/21/12 11:35	Analyzed: 12/26/12 15:42						
EPA 200.8												
Aluminum	ND	---	0.0500	mg/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.00100	"	"	---	---	---	---	---	---	
Chromium	ND	---	0.00200	"	"	---	---	---	---	---	---	
Copper	ND	---	0.00200	"	"	---	---	---	---	---	---	
Iron	ND	---	0.0500	"	"	---	---	---	---	---	---	
Lead	ND	---	0.00100	"	"	---	---	---	---	---	---	
Mercury	ND	---	0.0000800	"	"	---	---	---	---	---	---	
Nickel	ND	---	0.00200	"	"	---	---	---	---	---	---	
Zinc	ND	---	0.00400	"	"	---	---	---	---	---	---	
LCS (1212486-BS1)					Prepared: 12/21/12 11:35	Analyzed: 12/26/12 15:45						
EPA 200.8												
Aluminum	5.50	---	0.0500	mg/L	1	5.55	---	99	85-115%	---	---	
Cadmium	0.0579	---	0.00100	"	"	0.0555	---	104	"	---	---	
Chromium	0.0532	---	0.00200	"	"	"	---	96	"	---	---	
Copper	0.0560	---	0.00200	"	"	"	---	101	"	---	---	
Iron	5.50	---	0.0500	"	"	5.55	---	99	"	---	---	
Lead	0.0563	---	0.00100	"	"	0.0555	---	101	"	---	---	
Mercury	0.00113	---	0.0000800	"	"	0.00111	---	102	"	---	---	
Nickel	0.0532	---	0.00200	"	"	0.0555	---	96	"	---	---	
Zinc	0.0559	---	0.00400	"	"	"	---	101	"	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212261 - Method Prep: Aq						**Water**						
Blank (1212261-BLK1)					Prepared: 12/13/12 07:36 Analyzed: 12/13/12 11:22							
EPA 410.4												
Chemical Oxygen Demand	ND	---	10.0	mg/L	1	---	---	---	---	---	---	
LCS (1212261-BS1)					Prepared: 12/13/12 07:36 Analyzed: 12/13/12 11:22							
EPA 410.4												
Chemical Oxygen Demand	48.9	---	10.0	mg/L	1	50.0	---	98	90-110%	---	---	
Duplicate (1212261-DUP1)					Prepared: 12/13/12 07:36 Analyzed: 12/13/12 11:22							
QC Source Sample: CP1 121112G (A12L231-02)												
EPA 410.4												
Chemical Oxygen Demand	**25.2**	---	10.0	mg/L	1	---	37.4	---	---	39	10%	Q-01
Matrix Spike (1212261-MS1)					Prepared: 12/13/12 07:36 Analyzed: 12/13/12 11:22							
QC Source Sample: CP1 121112G (A12L231-02)												
EPA 410.4												
Chemical Oxygen Demand	98.2	---	11.1	mg/L	1	55.6	37.4	109	90-110%	---	---	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212277 - Total Suspended Solids							**Water**					
Blank (1212277-BLK1)						Prepared: 12/13/12 15:00	Analyzed: 12/14/12 13:45					
SM 2540 D												
Total Suspended Solids	ND	---	2.00	mg/L	1	---	---	---	---	---	---	
Reference (1212277-SRM1)						Prepared: 12/13/12 15:00	Analyzed: 12/14/12 13:45					
SM 2540 D												
Total Suspended Solids	106	---		mg/L	1	100		106	90-110%	---	---	

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager:	Chuck Gleason	02/07/13 16:33

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1212439 - EPA 1664							**Water**					
Blank (1212439-BLK1)					Prepared: 12/20/12 08:55		Analyzed: 12/21/12 17:52					
EPA 1664												
HEM (Oil and Grease)	ND	---	4.55	mg/L	1	---	---	---	---	---	---	
LCS (1212439-BS1)					Prepared: 12/20/12 08:55		Analyzed: 12/21/12 17:52					
EPA 1664												
HEM (Oil and Grease)	39.1	---		mg/L	1	40.0	---	98	78-114%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

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QUALITY CONTROL (QC) SAMPLE RESULTS

Chlorinated Pesticides and/or PCBs

Batch W2L0750 - EPA 3510C/L-L Ext. — **Water**

Blank (W2L0750-BLK1) Prepared: 12/17/12 11:15 Analyzed: 12/19/12 12:51

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 608												
4,4´-DDE	ND	0.0000025	0.0000050	mg/l	1	---	---	---	---	---	---	
4,4´-DDT	ND	0.0000031	0.0000050	"	"	---	---	---	---	---	---	
Aldrin	ND	0.0000015	0.0000050	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.0000021	0.0000050	"	"	---	---	---	---	---	---	
Aroclor 1016	ND	0.000050	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1221	ND	0.000060	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00010	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.000070	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.000060	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.000040	0.00010	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.000040	0.00010	"	"	---	---	---	---	---	---	

Surr: Tetrachloro-meta-xylene Recovery: 49 % Limits: 26-131 % Dilution: 1x

Decachlorobiphenyl 74 % 0.1-154 % "

LCS (W2L0750-BS1) Prepared: 12/17/12 11:15 Analyzed: 12/19/12 13:48

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 608												
4,4´-DDD	0.000106	0.0000030	0.0000050	mg/l	1	0.000100	---	106	30-141%	---	---	
4,4´-DDE	0.0000995	0.0000025	0.0000050	"	"	"	---	100	30-145%	---	---	
4,4´-DDT	0.000113	0.0000031	0.0000050	"	"	"	---	113	25-160%	---	---	
Aldrin	0.0000804	0.0000015	0.0000050	"	"	"	---	80	42-122%	---	---	
alpha-BHC	0.0000951	0.0000018	0.0000050	"	"	"	---	95	37-134%	---	---	
beta-BHC	0.000102	0.0000031	0.0000050	"	"	"	---	102	14-147%	---	---	
delta-BHC	0.0000986	0.0000025	0.0000050	"	"	"	---	99	19-140%	---	---	
gamma-BHC (Lindane)	0.0000957	0.0000021	0.0000050	"	"	"	---	96	32-127%	---	---	
alpha-Chlordane	0.0000981	0.0000050	0.0000050	"	"	"	---	98	50-150%	---	---	
gamma-Chlordane	0.0000956	0.0000050	0.0000050	"	"	"	---	96	"	---	---	
Dieldrin	0.0000967	0.0000021	0.0000050	"	"	"	---	97	36-146%	---	---	
Endosulfan sulfate	0.000114	0.0000050	0.0000050	"	"	"	---	114	26-144%	---	---	
Endosulfan I	0.0000852	0.0000017	0.0000050	"	"	"	---	85	45-153%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

Weck Laboratories, Inc

QUALITY CONTROL (QC) SAMPLE RESULTS

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch W2L0750 - EPA 3510C/L-L Ext.							**Water**					
LCS (W2L0750-BS1)					Prepared: 12/17/12 11:15 Analyzed: 12/19/12 13:48							
Endosulfan II	0.0000984	0.0000019	0.0000050	mg/l	"	"	---	98	2-202%	---	---	
Endrin	0.000104	0.0000028	0.0000050	"	"	"	---	104	30-147%	---	---	
Endrin aldehyde	0.0000985	0.0000030	0.0000050	"	"	"	---	98	41-203%	---	---	
Heptachlor	0.000100	0.0000017	0.0000050	"	"	"	---	100	34-111%	---	---	
Heptachlor epoxide	0.0000981	0.0000019	0.0000050	"	"	"	---	98	37-142%	---	---	
Surr: Tetrachloro-meta-xylene		*Recovery:*	*61 %*	*Limits:*	*26-131 %*		*Dilution: 1x*					
Decachlorobiphenyl			*91 %*		*0.1-154 %*		*"*					
LCS Dup (W2L0750-BSD1)					Prepared: 12/17/12 11:15 Analyzed: 12/19/12 14:16							
EPA 608												
4,4´-DDD	0.000106	0.0000030	0.0000050	mg/l	1	0.000100	---	106	30-141%	0.3	30%	
4,4´-DDE	0.0000995	0.0000025	0.0000050	"	"	"	---	99	30-145%	0.02	30%	
4,4´-DDT	0.000115	0.0000031	0.0000050	"	"	"	---	115	25-160%	2	30%	
Aldrin	0.0000892	0.0000015	0.0000050	"	"	"	---	89	42-122%	10	30%	
alpha-BHC	0.0000991	0.0000018	0.0000050	"	"	"	---	99	37-134%	4	30%	
beta-BHC	0.000102	0.0000031	0.0000050	"	"	"	---	102	14-147%	0.1	30%	
delta-BHC	0.0000988	0.0000025	0.0000050	"	"	"	---	99	19-140%	0.2	30%	
gamma-BHC (Lindane)	0.0000973	0.0000021	0.0000050	"	"	"	---	97	32-127%	2	30%	
alpha-Chlordane	0.000102	0.0000050	0.0000050	"	"	"	---	102	50-150%	4	30%	
gamma-Chlordane	0.0000993	0.0000050	0.0000050	"	"	"	---	99	"	4	30%	
Dieldrin	0.0000978	0.0000021	0.0000050	"	"	"	---	98	36-146%	1	30%	
Endosulfan sulfate	0.000117	0.0000050	0.0000050	"	"	"	---	117	26-144%	3	30%	
Endosulfan I	0.0000888	0.0000017	0.0000050	"	"	"	---	89	45-153%	4	30%	
Endosulfan II	0.000100	0.0000019	0.0000050	"	"	"	---	100	2-202%	2	30%	
Endrin	0.000104	0.0000028	0.0000050	"	"	"	---	104	30-147%	0.2	30%	
Endrin aldehyde	0.000104	0.0000030	0.0000050	"	"	"	---	104	41-203%	5	30%	
Heptachlor	0.000105	0.0000017	0.0000050	"	"	"	---	105	34-111%	5	30%	
Heptachlor epoxide	0.000100	0.0000019	0.0000050	"	"	"	---	100	37-142%	2	30%	
Surr: Tetrachloro-meta-xylene		*Recovery:*	*67 %*	*Limits:*	*26-131 %*		*Dilution: 1x*					
Decachlorobiphenyl			*102 %*		*0.1-154 %*		*"*					

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

Weck Laboratories, Inc

QUALITY CONTROL (QC) SAMPLE RESULTS

Chlorinated Pesticides and/or PCBs

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch W2L0750 - EPA 3510C/L-L Ext.							**Water**					

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

Notes and Definitions

Qualifiers:

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
Ja	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
O-01	Result for total Hexane Extractable Material (HEM) is below reporting level for this sample. Silica Gel Treatment (HEM-SGT) analysis was therefore not performed.
Q-01	Percent recovery and/or RPD is outside acceptance limits.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-23	Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Data is likely biased high.
Q-29	Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
S-06	Surrogate recovery is outside of established control limits.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

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Brian L Cone

Brian Cone, Industrial Services Manager

Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

*** Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 2012 1200Z	**Reported:**
Portland, OR 97296	Project Manager: Chuck Gleason	02/07/13 16:33

APEX LABS **CHAIN OF CUSTODY** Lab # A12L231 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals. Project Mgr: Chuck Gleason Project Name: 2012 1200Z Project # —

Address: Po Box 10067, Portland, OR 97296 Phone: 503 226 3441 Fax: — Email: chuck@calbag.com

Sampled by: SA de Ridder, Stormwater Management Svcs.

Site Location: OR WA Other: ______

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200-COLS	1200-Z	O&G	TSS	COD	608 Pesticides	608 PCBs LL	625 PAH/PCP pent	phthalates
1	CP1 121112 C		12/11/12	1453	W	2																✓						
2	CP1 121112 G		12/11/12	1453	W	10													✓				✓	✓	✓	✓	✓	✓
3	END																											
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ______

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
- ensure inclusion of Aldrin, DDT, DDE, Dieldrin in the analyses requested above
- see B. Cone regarding specific phthalate compounds to include in analysis.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 12/12/12	Signature: [signature] Date: 12/12/12	Signature: Date:	Signature: Date:
Printed Name: SA de Ridder Time: 1000	Printed Name: [illegible] Time: 1000	Printed Name: Time:	Printed Name: Time:
Company: Stormwater Management Services.	Company: APEX	Company:	Company:

Apex Labs

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Tuesday, May 14, 2013

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater / Stormwater

Enclosed are the results of analyses for work order A3D0647, which was received by the laboratory on 4/29/2013 at 6:30:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

Apex Labs

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DA3042913G	A3D0647-01	Water	04/29/13 05:00	04/29/13 06:30

Apex Laboratories

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL CASE NARRATIVE

Work Order: A3D0647

Hold-time Method 608 PCBs:

40CFR Method 608 PCB hold-time is 7 days. Sample was extracted on 14th day after sampling. New EPA hold-time guidelines for SW846 8082 PCBs sets no hold-time for PCBs.

.

The EPA document referenced below indicates that PCBs are stable in samples extracted beyond the method 608 hold-times, and should not be lost in significant quantities. The study estimated there is no more than a 5% decrease in PCB concentrations for samples held for 157 days and stored at 4°C.

Minimal impact on data is expected due to sample extraction outside EPA recommended holding time .

US EPA 2005 Sample Holding Time Reevaluation EPA/600/R-05/124 October 2005
http://www.epa.gov/esd/cmb/research/bs_033cmb06.pdf

Mark Zehr
Organics Manager
5/14/2013

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01)			**Matrix: Water**		**Batch: 3050306**			**C-07**
Aroclor 1016	ND	0.00980	0.0196	ug/L	1	05/14/13 12:57	EPA 8082A	
Aroclor 1221	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1232	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1242	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1248	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1254	**0.0206**	0.00980	0.0196	"	"	"	"	P-09
Aroclor 1260	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1262	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1268	ND	0.00980	0.0196	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 79 %*	*Limits: 40-135 %*	"	"	"	

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01RE1)			**Matrix: Water**		**Batch: 3050193**			**C-05**
Aldrin	ND	0.0291	0.0583	ug/L	1	05/08/13 12:37	EPA 608	
4,4'-DDE	ND	0.00485	0.00971	"	"	"	"	
4,4'-DDT	ND	0.0291	0.0583	"	"	"	"	
Dieldrin	ND	0.0194	0.0388	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)		*Recovery: 73 %*	*Limits: 25-140 %*		"	"	"	
Decachlorobiphenyl (Surr)		*91 %*	*Limits: 30-135 %*		"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01RE1)			**Matrix: Water**		**Batch: 3050109**			**R-04**
Acenaphthene	ND	0.0396	0.0792	ug/L	4	05/07/13 14:57	EPA 625	
Acenaphthylene	ND	0.0396	0.0792	"	"	"	"	
Anthracene	ND	0.0396	0.0792	"	"	"	"	
Benz(a)anthracene	ND	0.0396	0.0792	"	"	"	"	
Benzo(a)pyrene	ND	0.0594	0.119	"	"	"	"	
Benzo(b)fluoranthene	ND	0.0594	0.119	"	"	"	"	
Benzo(k)fluoranthene	ND	0.0594	0.119	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.0396	0.0792	"	"	"	"	
Chrysene	ND	0.0396	0.0792	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0396	0.0792	"	"	"	"	
Fluoranthene	ND	0.0396	0.0792	"	"	"	"	
Fluorene	ND	0.0396	0.0792	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0396	0.0792	"	"	"	"	
1-Methylnaphthalene	ND	0.0792	0.158	"	"	"	"	
2-Methylnaphthalene	ND	0.0792	0.158	"	"	"	"	
Naphthalene	ND	0.0792	0.158	"	"	"	"	
Phenanthrene	ND	0.0396	0.0792	"	"	"	"	
Pyrene	ND	0.0396	0.0792	"	"	"	"	
Carbazole	ND	0.0594	0.119	"	"	"	"	
Dibenzofuran	ND	0.0396	0.0792	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.990	1.98	"	"	"	"	
2-Chlorophenol	ND	0.990	1.98	"	"	"	"	
2,4-Dichlorophenol	ND	0.990	1.98	"	"	"	"	
2,4-Dimethylphenol	ND	0.990	1.98	"	"	"	"	
2,4-Dinitrophenol	ND	1.98	3.96	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	2.38	4.75	"	"	"	"	
2-Methylphenol	ND	0.990	1.98	"	"	"	"	
3+4-Methylphenol(s)	ND	0.990	1.98	"	"	"	"	
2-Nitrophenol	ND	0.990	1.98	"	"	"	"	
4-Nitrophenol	ND	0.990	1.98	"	"	"	"	
Pentachlorophenol (PCP)	ND	0.990	1.98	"	"	"	"	
Phenol	ND	1.98	3.96	"	"	"	"	
2,3,4,6-Tetrachlorophenol	ND	0.990	1.98	"	"	"	"	
2,3,5,6-Tetrachlorophenol	ND	0.990	1.98	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.990	1.98	"	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01RE1)			**Matrix: Water**		**Batch: 3050109**			**R-04**
2,4,6-Trichlorophenol	ND	0.990	1.98	ug/L	4	"	EPA 625	
Bis(2-ethylhexyl)phthalate	ND	4.36	8.71	"	"	"	"	
Butyl benzyl phthalate	ND	5.94	11.9	"	"	"	"	
Diethylphthalate	ND	5.94	11.9	"	"	"	"	
Dimethylphthalate	ND	5.94	11.9	"	"	"	"	
Di-n-butylphthalate	ND	5.94	11.9	"	"	"	"	
Di-n-octyl phthalate	ND	5.94	11.9	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 59 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*64 %*	*Limits: 45-120 %*	"	"	"	
Phenol-d6 (Surr)			*26 %*	*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*70 %*	*Limits: 30-125 %*	"	"	"	
2-Fluorophenol (Surr)			*34 %*	*Limits: 20-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*97 %*	*Limits: 35-125 %*	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01RE1)			**Matrix: Water**		**Batch: 3050109**			**R-04**
Acenaphthene	ND	0.0396	0.0792	ug/L	4	05/07/13 14:57	EPA 8270D P/P/P	
Acenaphthylene	ND	0.0396	0.0792	"	"	"	"	
Anthracene	ND	0.0396	0.0792	"	"	"	"	
Benz(a)anthracene	ND	0.0396	0.0792	"	"	"	"	
Benzo(a)pyrene	ND	0.0594	0.119	"	"	"	"	
Benzo(b)fluoranthene	ND	0.0594	0.119	"	"	"	"	
Benzo(k)fluoranthene	ND	0.0594	0.119	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.0396	0.0792	"	"	"	"	
Chrysene	ND	0.0396	0.0792	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0396	0.0792	"	"	"	"	
Fluoranthene	ND	0.0396	0.0792	"	"	"	"	
Fluorene	ND	0.0396	0.0792	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0396	0.0792	"	"	"	"	
2-Methylnaphthalene	ND	0.0792	0.158	"	"	"	"	
Naphthalene	ND	0.0792	0.158	"	"	"	"	
Phenanthrene	ND	0.0396	0.0792	"	"	"	"	
Pyrene	ND	0.0396	0.0792	"	"	"	"	
Pentachlorophenol (PCP)	ND	0.990	1.98	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	4.36	8.71	"	"	"	"	
Butyl benzyl phthalate	ND	5.94	11.9	"	"	"	"	
Diethylphthalate	ND	5.94	11.9	"	"	"	"	
Dimethylphthalate	ND	5.94	11.9	"	"	"	"	
Di-n-butylphthalate	ND	5.94	11.9	"	"	"	"	
Di-n-octyl phthalate	ND	5.94	11.9	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 59 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*64 %*	*Limits: 30-120 %*	"	"	"	
Phenol-d6 (Surr)			*26 %*	*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*70 %*	*Limits: 50-125 %*	"	"	"	
2-Fluorophenol (Surr)			*34 %*	*Limits: 15-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*97 %*	*Limits: 35-125 %*	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01)			**Matrix: Water**					
Batch: 3040731								
Aluminum	**0.213**	0.0250	0.0500	mg/L	1	04/30/13 15:51	EPA 200.8	
Cadmium	**0.000589**	0.000500	0.00100	"	"	"	"	J
Chromium	**0.00170**	0.000400	0.00200	"	"	"	"	J
Copper	**0.114**	0.00100	0.00200	"	"	"	"	
Iron	**0.720**	0.0250	0.0500	"	"	"	"	
Lead	**0.0183**	0.000500	0.00100	"	"	"	"	
Mercury	**0.0000492**	0.0000400	0.0000800	"	"	"	"	J
Nickel	**0.0122**	0.000500	0.00200	"	"	"	"	
Zinc	**0.0419**	0.00200	0.00400	"	"	"	"	

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Calbag Metals	Project:	**Stormwater**		
PO Box 10067	Project Number:	Stormwater		**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder		05/14/13 14:44

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3042913G (A3D0647-01)			**Matrix: Water**					
Batch: 3040715								
pH	**6.72**	---		pH Units	1	04/29/13 17:28	EPA 150.1	
pH Temperature (deg C)	**23.7**	---		"	"	"	"	
Batch: 3040721								
Chemical Oxygen Demand	**23.8**	5.58	10.0	mg/L	"	04/30/13 11:42	EPA 410.4	
Batch: 3040727								
Total Suspended Solids	**14.0**	5.00	5.00	"	"	05/01/13 13:10	SM 2540 D	
Batch: 3050084								
HEM (Oil and Grease)	ND	4.85	4.85	"	"	05/03/13 19:48	EPA 1664	O-01

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PO Box 10067	Project Number:	Stormwater	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050306 - EPA 3510C (Neutral pH)							**Water**					
Blank (3050306-BLK1)					Prepared: 05/13/13 09:08		Analyzed: 05/14/13 12:03					C-07
EPA 8082A												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)		*Recovery: 77 %*		*Limits: 40-135 %*		*Dilution: 1x*						
LCS (3050306-BS1)					Prepared: 05/13/13 09:08		Analyzed: 05/14/13 12:21					C-07
EPA 8082A												
Aroclor 1016	1.04	0.0100	0.0200	ug/L	1	1.25	---	83	40-140%	---	---	
Aroclor 1260	0.978	0.0100	0.0200	"	"	"	---	78	"	---	---	
Surr: Decachlorobiphenyl (Surr)		*Recovery: 75 %*		*Limits: 40-135 %*		*Dilution: 1x*						
LCS Dup (3050306-BSD1)					Prepared: 05/13/13 09:08		Analyzed: 05/14/13 12:39					C-07, Q-19
EPA 8082A												
Aroclor 1016	1.07	0.0100	0.0200	ug/L	1	1.25	---	86	40-140%	2	30%	
Aroclor 1260	1.00	0.0100	0.0200	"	"	"	---	80	"	2	30%	
Surr: Decachlorobiphenyl (Surr)		*Recovery: 77 %*		*Limits: 40-135 %*		*Dilution: 1x*						

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050193 - EPA 3510C (Neutral pH)/3640A (GPC)							Water					
Blank (3050193-BLK1)						Prepared: 05/04/13 09:38	Analyzed: 05/08/13 11:43					C-05
EPA 608												
Aldrin	ND	0.0273	0.0545	ug/L	1	---	---	---	---	---	---	
4,4'-DDE	ND	0.00455	0.00909	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*67 %*	*Limits:*	*25-140 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*88 %*		*30-135 %*		*"*					
LCS (3050193-BS1)						Prepared: 05/04/13 09:38	Analyzed: 05/08/13 12:01					C-05
EPA 608												
Aldrin	0.438	0.0300	0.0600	ug/L	1	0.500	---	88	25-140%	---	---	
4,4'-DDE	0.519	0.00500	0.0100	"	"	"	---	104	35-140%	---	---	
4,4'-DDT	0.609	0.0300	0.0600	"	"	"	---	122	45-140%	---	---	
Dieldrin	0.509	0.0200	0.0400	"	"	"	---	102	60-130%	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*70 %*	*Limits:*	*25-140 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*99 %*		*30-135 %*		*"*					
LCS Dup (3050193-BSD1)						Prepared: 05/04/13 09:38	Analyzed: 05/08/13 12:19					C-05
EPA 608												
Aldrin	0.459	0.0300	0.0600	ug/L	1	0.500	---	92	25-140%	5	30%	
4,4'-DDE	0.513	0.00500	0.0100	"	"	"	---	103	35-140%	1	30%	
4,4'-DDT	0.579	0.0300	0.0600	"	"	"	---	116	45-140%	5	30%	
Dieldrin	0.505	0.0200	0.0400	"	"	"	---	101	60-130%	0.7	30%	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*78 %*	*Limits:*	*25-140 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*90 %*		*30-135 %*		*"*					

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3050109-BLK1)						Prepared: 05/06/13 08:00	Analyzed: 05/07/13 11:03					
EPA 625												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	**0.0125**	0.00909	0.0182	"	"	---	---	---	---	---	---	B-02, J
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	1.00	2.00	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	

Surr: Nitrobenzene-d5 (Surr)	*Recovery: 69 %*	*Limits: 35-120 %*	*Dilution: 1x*	
2-Fluorobiphenyl (Surr)	*57 %*	*45-120 %*	*"*	
Phenol-d6 (Surr)	*25 %*	*10-120 %*	*"*	
p-Terphenyl-d14 (Surr)	*83 %*	*30-125 %*	*"*	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)								**Water**				
Blank (3050109-BLK1)						Prepared: 05/06/13 08:00		Analyzed: 05/07/13 11:03				
Surr: 2-Fluorophenol (Surr)		*Recovery:*	*40 %*	*Limits: 20-120 %*			*Dilution: 1x*					
2,4,6-Tribromophenol (Surr)			*79 %*	*35-125 %*			*"*					
LCS (3050109-BS1)						Prepared: 05/06/13 08:00		Analyzed: 05/07/13 11:40				
EPA 625												
Acenaphthene	2.92	0.0100	0.0200	ug/L	1	4.00	---	73	47-145%	---	---	
Acenaphthylene	3.20	0.0100	0.0200	"	"	"	---	80	33-145%	---	---	
Anthracene	3.34	0.0100	0.0200	"	"	"	---	83	27-133%	---	---	
Benz(a)anthracene	3.51	0.0100	0.0200	"	"	"	---	88	33-143%	---	---	
Benzo(a)pyrene	3.91	0.0150	0.0300	"	"	"	---	98	17-163%	---	---	
Benzo(b)fluoranthene	3.81	0.0150	0.0300	"	"	"	---	95	24-159%	---	---	
Benzo(k)fluoranthene	3.73	0.0150	0.0300	"	"	"	---	93	11-162%	---	---	
Benzo(b+k)fluoranthene(s)	7.46	0.0300	0.0600	"	"	8.00	---	93	"	---	---	
Benzo(g,h,i)perylene	3.64	0.0100	0.0200	"	"	4.00	---	91	1-219%	---	---	
Chrysene	3.54	0.0100	0.0200	"	"	"	---	89	17-168%	---	---	
Dibenz(a,h)anthracene	3.59	0.0100	0.0200	"	"	"	---	90	1-227%	---	---	
Fluoranthene	3.55	0.0100	0.0200	"	"	"	---	89	26-137%	---	---	
Fluorene	3.20	0.0100	0.0200	"	"	"	---	80	59-121%	---	---	
Indeno(1,2,3-cd)pyrene	3.43	0.0100	0.0200	"	"	"	---	86	1-171%	---	---	
1-Methylnaphthalene	2.66	0.0200	0.0400	"	"	"	---	67	45-120%	---	---	
2-Methylnaphthalene	2.63	0.0200	0.0400	"	"	"	---	66	"	---	---	
Naphthalene	2.55	0.0200	0.0400	"	"	"	---	64	21-133%	---	---	
Phenanthrene	3.22	0.0100	0.0200	"	"	"	---	80	54-120%	---	---	B-02
Pyrene	3.55	0.0100	0.0200	"	"	"	---	89	52-115%	---	---	
Pentachlorophenol (PCP)	3.65	0.250	0.500	"	"	"	---	91	14-176%	---	---	
Bis(2-ethylhexyl)phthalate	3.75	1.10	2.20	"	"	"	---	94	8-158%	---	---	
Butyl benzyl phthalate	3.66	1.50	3.00	"	"	"	---	92	1-152%	---	---	
Diethylphthalate	3.39	1.50	3.00	"	"	"	---	85	1-114%	---	---	
Dimethylphthalate	3.36	1.50	3.00	"	"	"	---	84	1-112%	---	---	
Di-n-butylphthalate	4.20	1.50	3.00	"	"	"	---	105	1-118%	---	---	
Di-n-octyl phthalate	3.54	1.50	3.00	"	"	"	---	88	4-146%	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*80 %*	*Limits: 35-120 %*			*Dilution: 1x*					

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)							**Water**					
LCS (3050109-BS1)					Prepared: 05/06/13 08:00		Analyzed: 05/07/13 11:40					
Surr: 2-Fluorobiphenyl (Surr)		*Recovery:*	*69 %*	*Limits:*	*45-120 %*		*Dilution: 1x*					
Phenol-d6 (Surr)			*30 %*		*10-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*83 %*		*30-125 %*		*"*					
2-Fluorophenol (Surr)			*47 %*		*20-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*89 %*		*35-125 %*		*"*					
LCS Dup (3050109-BSD1)					Prepared: 05/06/13 08:00		Analyzed: 05/07/13 12:16					**Q-19**
EPA 625												
Acenaphthene	2.83	0.0100	0.0200	ug/L	1	4.00	---	71	47-145%	3	30%	
Acenaphthylene	3.13	0.0100	0.0200	"	"	"	---	78	33-145%	2	30%	
Anthracene	3.42	0.0100	0.0200	"	"	"	---	86	27-133%	3	30%	
Benz(a)anthracene	3.50	0.0100	0.0200	"	"	"	---	87	33-143%	0.4	30%	
Benzo(a)pyrene	3.98	0.0150	0.0300	"	"	"	---	99	17-163%	2	30%	
Benzo(b)fluoranthene	3.86	0.0150	0.0300	"	"	"	---	97	24-159%	1	30%	
Benzo(k)fluoranthene	3.71	0.0150	0.0300	"	"	"	---	93	11-162%	0.6	30%	
Benzo(b+k)fluoranthene(s)	7.48	0.0300	0.0600	"	"	8.00	---	94	"	0.4	30%	
Benzo(g,h,i)perylene	3.57	0.0100	0.0200	"	"	4.00	---	89	1-219%	2	30%	
Chrysene	3.50	0.0100	0.0200	"	"	"	---	88	17-168%	1	30%	
Dibenz(a,h)anthracene	3.56	0.0100	0.0200	"	"	"	---	89	1-227%	0.7	30%	
Fluoranthene	3.64	0.0100	0.0200	"	"	"	---	91	26-137%	2	30%	
Fluorene	3.21	0.0100	0.0200	"	"	"	---	80	59-121%	0.3	30%	
Indeno(1,2,3-cd)pyrene	3.40	0.0100	0.0200	"	"	"	---	85	1-171%	0.9	30%	
1-Methylnaphthalene	2.33	0.0200	0.0400	"	"	"	---	58	45-120%	13	30%	
2-Methylnaphthalene	2.27	0.0200	0.0400	"	"	"	---	57	"	15	30%	
Naphthalene	2.19	0.0200	0.0400	"	"	"	---	55	21-133%	15	30%	
Phenanthrene	3.27	0.0100	0.0200	"	"	"	---	82	54-120%	2	30%	B-02
Pyrene	3.62	0.0100	0.0200	"	"	"	---	90	52-115%	2	30%	
Pentachlorophenol (PCP)	3.70	0.250	0.500	"	"	"	---	93	14-176%	1	30%	
Bis(2-ethylhexyl)phthalate	3.73	1.10	2.20	"	"	"	---	93	8-158%	0.5	30%	
Butyl benzyl phthalate	3.62	1.50	3.00	"	"	"	---	91	1-152%	1	30%	
Diethylphthalate	3.42	1.50	3.00	"	"	"	---	85	1-114%	0.7	30%	
Dimethylphthalate	3.42	1.50	3.00	"	"	"	---	86	1-112%	2	30%	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)							Water					
LCS Dup (3050109-BSD1)					Prepared: 05/06/13 08:00		Analyzed: 05/07/13 12:16					**Q-19**
Di-n-butylphthalate	4.14	1.50	3.00	ug/L	"	"	---	104	1-118%	1	30%	
Di-n-octyl phthalate	3.52	1.50	3.00	"	"	"	---	88	4-146%	0.5	30%	

Surr:	Recovery:	Limits:	Dilution:
Nitrobenzene-d5 (Surr)	*80 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*70 %*	*45-120 %*	*"*
Phenol-d6 (Surr)	*31 %*	*10-120 %*	*"*
p-Terphenyl-d14 (Surr)	*83 %*	*30-125 %*	*"*
2-Fluorophenol (Surr)	*47 %*	*20-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*90 %*	*35-125 %*	*"*

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Brian L Cone

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Batch 3050109 - EPA 3510C (Acid Extraction) — **Water**

Blank (3050109-BLK1) Prepared: 05/06/13 08:00 Analyzed: 05/07/13 11:03

EPA 8270D P/P/P

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	**0.0125**	0.00909	0.0182	"	"	---	---	---	---	---	---	B-02, J
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Carbazole	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Chlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	0.545	1.09	"	"	---	---	---	---	---	---	
2-Methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Nitrophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3050109-BLK1)						Prepared: 05/06/13 08:00	Analyzed: 05/07/13 11:03					
4-Nitrophenol	ND	0.227	0.455	ug/L	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Phenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,3,5,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	1.00	2.00	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*69 %*	*Limits:*	*35-120 %*	*Dilution:*	*1x*					
2-Fluorobiphenyl (Surr)			*57 %*		*30-120 %*		*"*					
Phenol-d6 (Surr)			*25 %*		*10-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*83 %*		*50-125 %*		*"*					
2-Fluorophenol (Surr)			*40 %*		*15-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*79 %*		*35-125 %*		*"*					
LCS (3050109-BS1)						Prepared: 05/06/13 08:00	Analyzed: 05/07/13 11:40					
EPA 8270D P/P/P												
Acenaphthene	2.92	0.0100	0.0200	ug/L	1	4.00	---	73	45-125%	---	---	
Acenaphthylene	3.20	0.0100	0.0200	"	"	"	---	80	50-125%	---	---	
Anthracene	3.34	0.0100	0.0200	"	"	"	---	83	55-125%	---	---	
Benz(a)anthracene	3.51	0.0100	0.0200	"	"	"	---	88	"	---	---	
Benzo(a)pyrene	3.91	0.0150	0.0300	"	"	"	---	98	"	---	---	
Benzo(b)fluoranthene	3.81	0.0150	0.0300	"	"	"	---	95	45-125%	---	---	
Benzo(k)fluoranthene	3.73	0.0150	0.0300	"	"	"	---	93	"	---	---	
Benzo(b+k)fluoranthene(s)	7.46	0.0300	0.0600	"	"	8.00	---	93	"	---	---	
Benzo(g,h,i)perylene	3.64	0.0100	0.0200	"	"	4.00	---	91	40-125%	---	---	
Chrysene	3.54	0.0100	0.0200	"	"	"	---	89	55-125%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Batch 3050109 - EPA 3510C (Acid Extraction) — **Water**

LCS (3050109-BS1) Prepared: 05/06/13 08:00 Analyzed: 05/07/13 11:40

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Dibenz(a,h)anthracene	3.59	0.0100	0.0200	ug/L	"	"	---	90	40-125%	---	---	
Fluoranthene	3.55	0.0100	0.0200	"	"	"	---	89	55-125%	---	---	
Fluorene	3.20	0.0100	0.0200	"	"	"	---	80	50-125%	---	---	
Indeno(1,2,3-cd)pyrene	3.43	0.0100	0.0200	"	"	"	---	86	45-125%	---	---	
1-Methylnaphthalene	2.66	0.0200	0.0400	"	"	"	---	67	45-120%	---	---	
2-Methylnaphthalene	2.63	0.0200	0.0400	"	"	"	---	66	"	---	---	
Naphthalene	2.55	0.0200	0.0400	"	"	"	---	64	40-125%	---	---	
Phenanthrene	3.22	0.0100	0.0200	"	"	"	---	80	50-125%	---	---	B-02
Pyrene	3.55	0.0100	0.0200	"	"	"	---	89	"	---	---	
Carbazole	3.91	0.0150	0.0300	"	"	"	---	98	"	---	---	
Dibenzofuran	3.11	0.0100	0.0200	"	"	"	---	78	55-125%	---	---	
4-Chloro-3-methylphenol	3.15	0.250	0.500	"	"	"	---	79	45-120%	---	---	
2-Chlorophenol	3.31	0.250	0.500	"	"	"	---	83	35-120%	---	---	
2,4-Dichlorophenol	3.42	0.250	0.500	"	"	"	---	86	50-120%	---	---	
2,4-Dimethylphenol	2.99	0.250	0.500	"	"	"	---	75	30-120%	---	---	
2,4-Dinitrophenol	3.81	0.500	1.00	"	"	"	---	95	15-130%	---	---	
4,6-Dinitro-2-methylphenol	3.81	0.600	1.20	"	"	"	---	95	40-135%	---	---	
2-Methylphenol	2.88	0.250	0.500	"	"	"	---	72	40-120%	---	---	
3+4-Methylphenol(s)	2.68	0.250	0.500	"	"	"	---	67	30-120%	---	---	
2-Nitrophenol	3.55	0.250	0.500	"	"	"	---	89	40-120%	---	---	
4-Nitrophenol	1.34	0.250	0.500	"	"	"	---	33	10-140%	---	---	
Pentachlorophenol (PCP)	3.65	0.250	0.500	"	"	"	---	91	40-125%	---	---	
Phenol	1.28	0.500	1.00	"	"	"	---	32	10-120%	---	---	
2,3,4,6-Tetrachlorophenol	3.31	0.250	0.500	"	"	"	---	83	40-120%	---	---	
2,3,5,6-Tetrachlorophenol	3.41	0.250	0.500	"	"	"	---	85	"	---	---	
2,4,5-Trichlorophenol	3.39	0.250	0.500	"	"	"	---	85	50-120%	---	---	
2,4,6-Trichlorophenol	3.30	0.250	0.500	"	"	"	---	82	"	---	---	
Bis(2-ethylhexyl)phthalate	3.75	1.10	2.20	"	"	"	---	94	40-125%	---	---	
Butyl benzyl phthalate	3.66	1.50	3.00	"	"	"	---	92	45-125%	---	---	
Diethylphthalate	3.39	1.50	3.00	"	"	"	---	85	40-125%	---	---	
Dimethylphthalate	3.36	1.50	3.00	"	"	"	---	84	25-125%	---	---	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	Stormwater	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)							**Water**					
LCS (3050109-BS1)					Prepared: 05/06/13 08:00	Analyzed: 05/07/13 11:40						
Di-n-butylphthalate	4.20	1.50	3.00	ug/L	"	"	---	105	55-125%	---	---	
Di-n-octyl phthalate	3.54	1.50	3.00	"	"	"	---	88	35-125%	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*80 %*	*Limits: 35-120 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*69 %*	*30-120 %*		*"*						
Phenol-d6 (Surr)			*30 %*	*10-120 %*		*"*						
p-Terphenyl-d14 (Surr)			*83 %*	*50-125 %*		*"*						
2-Fluorophenol (Surr)			*47 %*	*15-120 %*		*"*						
2,4,6-Tribromophenol (Surr)			*89 %*	*35-125 %*		*"*						
LCS Dup (3050109-BSD1)					Prepared: 05/06/13 08:00	Analyzed: 05/07/13 12:16						**Q-19**
EPA 8270D P/P/P												
Acenaphthene	2.83	0.0100	0.0200	ug/L	1	4.00	---	71	45-125%	3	30%	
Acenaphthylene	3.13	0.0100	0.0200	"	"	"	---	78	50-125%	2	30%	
Anthracene	3.42	0.0100	0.0200	"	"	"	---	86	55-125%	3	30%	
Benz(a)anthracene	3.50	0.0100	0.0200	"	"	"	---	87	"	0.4	30%	
Benzo(a)pyrene	3.98	0.0150	0.0300	"	"	"	---	99	"	2	30%	
Benzo(b)fluoranthene	3.86	0.0150	0.0300	"	"	"	---	97	45-125%	1	30%	
Benzo(k)fluoranthene	3.71	0.0150	0.0300	"	"	"	---	93	"	0.6	30%	
Benzo(b+k)fluoranthene(s)	7.48	0.0300	0.0600	"	"	8.00	---	94	"	0.4	30%	
Benzo(g,h,i)perylene	3.57	0.0100	0.0200	"	"	4.00	---	89	40-125%	2	30%	
Chrysene	3.50	0.0100	0.0200	"	"	"	---	88	55-125%	1	30%	
Dibenz(a,h)anthracene	3.56	0.0100	0.0200	"	"	"	---	89	40-125%	0.7	30%	
Fluoranthene	3.64	0.0100	0.0200	"	"	"	---	91	55-125%	2	30%	
Fluorene	3.21	0.0100	0.0200	"	"	"	---	80	50-125%	0.3	30%	
Indeno(1,2,3-cd)pyrene	3.40	0.0100	0.0200	"	"	"	---	85	45-125%	0.9	30%	
1-Methylnaphthalene	2.33	0.0200	0.0400	"	"	"	---	58	45-120%	13	30%	
2-Methylnaphthalene	2.27	0.0200	0.0400	"	"	"	---	57	"	15	30%	
Naphthalene	2.19	0.0200	0.0400	"	"	"	---	55	40-125%	15	30%	
Phenanthrene	3.27	0.0100	0.0200	"	"	"	---	82	50-125%	2	30%	B-02
Pyrene	3.62	0.0100	0.0200	"	"	"	---	90	"	2	30%	
Carbazole	3.91	0.0150	0.0300	"	"	"	---	98	"	0.05	30%	
Dibenzofuran	3.06	0.0100	0.0200	"	"	"	---	77	55-125%	1	30%	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	Stormwater	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050109 - EPA 3510C (Acid Extraction)								**Water**				
LCS Dup (3050109-BSD1)					Prepared: 05/06/13 08:00		Analyzed: 05/07/13 12:16					**Q-19**
4-Chloro-3-methylphenol	3.14	0.250	0.500	ug/L	"	"	---	78	45-120%	0.4	30%	
2-Chlorophenol	3.16	0.250	0.500	"	"	"	---	79	35-120%	5	30%	
2,4-Dichlorophenol	3.44	0.250	0.500	"	"	"	---	86	50-120%	0.5	30%	
2,4-Dimethylphenol	2.76	0.250	0.500	"	"	"	---	69	30-120%	8	30%	
2,4-Dinitrophenol	3.97	0.500	1.00	"	"	"	---	99	15-130%	4	30%	
4,6-Dinitro-2-methylphenol	3.95	0.600	1.20	"	"	"	---	99	40-135%	4	30%	
2-Methylphenol	2.82	0.250	0.500	"	"	"	---	70	40-120%	2	30%	
3+4-Methylphenol(s)	2.64	0.250	0.500	"	"	"	---	66	30-120%	2	30%	
2-Nitrophenol	3.59	0.250	0.500	"	"	"	---	90	40-120%	1	30%	
4-Nitrophenol	1.39	0.250	0.500	"	"	"	---	35	10-140%	4	30%	
Pentachlorophenol (PCP)	3.70	0.250	0.500	"	"	"	---	93	40-125%	1	30%	
Phenol	1.28	0.500	1.00	"	"	"	---	32	10-120%	0.4	30%	
2,3,4,6-Tetrachlorophenol	3.43	0.250	0.500	"	"	"	---	86	40-120%	3	30%	
2,3,5,6-Tetrachlorophenol	3.45	0.250	0.500	"	"	"	---	86	"	1	30%	
2,4,5-Trichlorophenol	3.44	0.250	0.500	"	"	"	---	86	50-120%	2	30%	
2,4,6-Trichlorophenol	3.39	0.250	0.500	"	"	"	---	85	"	3	30%	
Bis(2-ethylhexyl)phthalate	3.73	1.10	2.20	"	"	"	---	93	40-125%	0.5	30%	
Butyl benzyl phthalate	3.62	1.50	3.00	"	"	"	---	91	45-125%	1	30%	
Diethylphthalate	3.42	1.50	3.00	"	"	"	---	85	40-125%	0.7	30%	
Dimethylphthalate	3.42	1.50	3.00	"	"	"	---	86	25-125%	2	30%	
Di-n-butylphthalate	4.14	1.50	3.00	"	"	"	---	104	55-125%	1	30%	
Di-n-octyl phthalate	3.52	1.50	3.00	"	"	"	---	88	35-125%	0.5	30%	

Surr:		Recovery:		Limits:		Dilution:
Surr:	*Nitrobenzene-d5 (Surr)*	*Recovery:*	*80 %*	*Limits:*	*35-120 %*	*Dilution: 1x*
	2-Fluorobiphenyl (Surr)		*70 %*		*30-120 %*	*"*
	Phenol-d6 (Surr)		*31 %*		*10-120 %*	*"*
	p-Terphenyl-d14 (Surr)		*83 %*		*50-125 %*	*"*
	2-Fluorophenol (Surr)		*47 %*		*15-120 %*	*"*
	2,4,6-Tribromophenol (Surr)		*90 %*		*35-125 %*	*"*

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	Stormwater	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3040731 - EPA 3015A							Water					
Blank (3040731-BLK1)					Prepared: 04/30/13 10:38		Analyzed: 04/30/13 14:41					
EPA 200.8												
Aluminum	ND	0.0250	0.0500	mg/L	1	---	---	---	---	---	---	
Cadmium	ND	0.000500	0.00100	"	"	---	---	---	---	---	---	
Chromium	ND	0.000400	0.00200	"	"	---	---	---	---	---	---	
Copper	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Iron	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	
Lead	ND	0.000500	0.00100	"	"	---	---	---	---	---	---	
Mercury	ND	0.0000400	0.0000800	"	"	---	---	---	---	---	---	
Nickel	ND	0.000500	0.00200	"	"	---	---	---	---	---	---	
Zinc	ND	0.00200	0.00400	"	"	---	---	---	---	---	---	
LCS (3040731-BS1)					Prepared: 04/30/13 10:38		Analyzed: 04/30/13 14:44					
EPA 200.8												
Aluminum	5.66	0.0250	0.0500	mg/L	1	5.56	---	102	85-115%	---	---	
Cadmium	0.0551	0.000500	0.00100	"	"	0.0556	---	99	"	---	---	
Chromium	0.0568	0.000400	0.00200	"	"	"	---	102	"	---	---	
Copper	0.0570	0.00100	0.00200	"	"	"	---	103	"	---	---	
Iron	5.74	0.0250	0.0500	"	"	5.56	---	103	"	---	---	
Lead	0.0547	0.000500	0.00100	"	"	0.0556	---	98	"	---	---	
Mercury	0.00107	0.0000400	0.0000800	"	"	0.00111	---	96	"	---	---	
Nickel	0.0571	0.000500	0.00200	"	"	0.0556	---	103	"	---	---	
Zinc	0.0569	0.00200	0.00400	"	"	"	---	102	"	---	---	
Matrix Spike (3040731-MS2)					Prepared: 04/30/13 10:38		Analyzed: 04/30/13 15:54					
QC Source Sample: DA3042913G (A3D0647-01)												
EPA 200.8												
Aluminum	5.25	0.0250	0.0500	mg/L	1	5.56	0.213	91	70-130%	---	---	
Cadmium	0.0552	0.000500	0.00100	"	"	0.0556	0.000589	98	"	---	---	
Chromium	0.0563	0.000400	0.00200	"	"	"	0.00170	98	"	---	---	
Copper	0.164	0.00100	0.00200	"	"	"	0.114	91	"	---	---	
Iron	5.75	0.0250	0.0500	"	"	5.56	0.720	90	"	---	---	
Lead	0.0716	0.000500	0.00100	"	"	0.0556	0.0183	96	"	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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503-718-0333 Fax

Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3040731 - EPA 3015A							**Water**					
Matrix Spike (3040731-MS2)						Prepared: 04/30/13 10:38	Analyzed: 04/30/13 15:54					
QC Source Sample: DA3042913G (A3D0647-01)												
Mercury	0.00106	0.0000400	0.0000800	mg/L	"	0.00111	0.0000492	91	"	---	---	
Nickel	0.0661	0.000500	0.00200	"	"	0.0556	0.0122	97	"	---	---	
Zinc	0.0945	0.00200	0.00400	"	"	"	0.0419	95	"	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3040715 - Method Prep: Aq							**Water**					
Reference (3040715-SRM1)					Prepared: 04/29/13 17:20		Analyzed: 04/29/13 17:23					
EPA 150.1												
pH	6.00	---		pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (3040715-SRM2)					Prepared: 04/29/13 17:20		Analyzed: 04/29/13 17:29					
EPA 150.1												
pH	8.01	---		pH Units	1	8.00		100	98.4-101.7%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3040721 - Method Prep: Aq						**Water**						
Blank (3040721-BLK1)						Prepared: 04/30/13 08:10	Analyzed: 04/30/13 11:42					
EPA 410.4												
Chemical Oxygen Demand	ND	5.58	10.0	mg/L	1	---	---	---	---	---	---	
LCS (3040721-BS1)						Prepared: 04/30/13 08:10	Analyzed: 04/30/13 11:42					
EPA 410.4												
Chemical Oxygen Demand	47.1	5.58	10.0	mg/L	1	50.0	---	94	90-110%	---	---	
Duplicate (3040721-DUP1)						Prepared: 04/30/13 08:10	Analyzed: 04/30/13 11:42					
QC Source Sample: DA3042913G (A3D0647-01)												
EPA 410.4												
Chemical Oxygen Demand	**21.1**	5.58	10.0	mg/L	1	---	23.8	---	---	12	10%	Q-01
Matrix Spike (3040721-MS1)						Prepared: 04/30/13 08:10	Analyzed: 04/30/13 11:42					
QC Source Sample: DA3042913G (A3D0647-01)												
EPA 410.4												
Chemical Oxygen Demand	74.2	6.20	11.1	mg/L	1	55.6	23.8	91	90-110%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3040727 - Total Suspended Solids							**Water**					
Blank (3040727-BLK1)						Prepared: 04/30/13 12:54	Analyzed: 05/01/13 13:10					
SM 2540 D												
Total Suspended Solids	ND	2.00	2.00	mg/L	1	---	---	---	---	---	---	
Duplicate (3040727-DUP2)						Prepared: 04/30/13 12:54	Analyzed: 05/01/13 13:10					
QC Source Sample: DA3042913G (A3D0647-01)												
SM 2540 D												
Total Suspended Solids	**14.0**	5.00	5.00	mg/L	1	---	14.0	---	---	0	20%	
Reference (3040727-SRM1)						Prepared: 04/30/13 12:54	Analyzed: 05/01/13 13:10					
SM 2540 D												
Total Suspended Solids	98.0			mg/L	1	100		98	90-110%	---	---	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	Stormwater	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	05/14/13 14:44

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050084 - EPA 1664							**Water**					
Blank (3050084-BLK1)					Prepared: 05/03/13 10:19 Analyzed: 05/03/13 19:48							
EPA 1664												
HEM (Oil and Grease)	ND	4.55	4.55	mg/L	1	---	---	---	---	---	---	
LCS (3050084-BS1)					Prepared: 05/03/13 10:19 Analyzed: 05/03/13 19:48							
EPA 1664												
HEM (Oil and Grease)	40.9			mg/L	1	40.0	---	102	78-114%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44

Notes and Definitions

Qualifiers:

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
J	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
O-01	Result for total Hexane Extractable Material (HEM) is below reporting level for this sample. Silica Gel Treatment (HEM-SGT) analysis was therefore not performed.
P-09	Due to weathering and/or the presence of an unknown mixture of PCB Congeners, the pattern does not match the standard used for calibration. Results are Estimated and based on the closest matching Aroclor.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
R-04	Reporting levels elevated due to dilution necessary for analysis.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	Stormwater	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	05/14/13 14:44

--- QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

*** Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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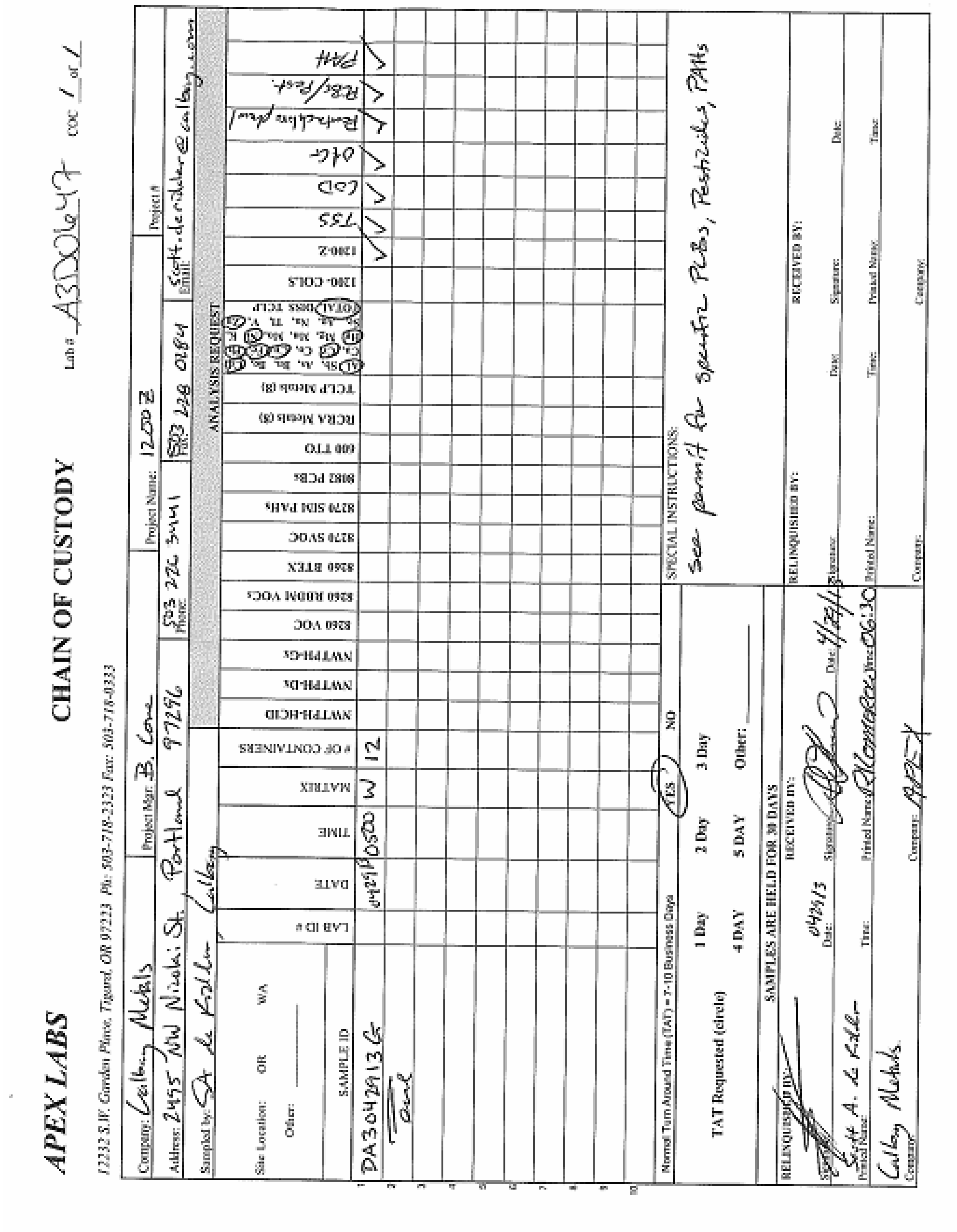
Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: Stormwater	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	05/14/13 14:44



APEX LABS — **CHAIN OF CUSTODY** — Lab # A3D0647 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals — Project Mgr: B. Cone — Project Name: 1200 Z — Project #

Address: 2495 NW Nicolai St, Portland 97296 — Phone: 503 226 3441 — Fax: 503 228 0184 — Email: scott.deridder@calbag.com

Sampled by: SA de Ridder Calbag

Site Location: OR WA Other:

ANALYSIS REQUEST

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	1200-Z	TSS	COD	O+G	Pentachlorophenol	PCBs/Pest.	PAH
DA3042913G		0429B	0500	W	12	✓	✓	✓	✓	✓	✓	✓
Comp												

Other analysis columns (not marked): NWTPH-HCID, NWTPH-Dx, NWTPH-Gx, 8260 VOC, 8260 RBDM VOCs, 8260 BTEX, 8270 SVOC, 8270 SIM PAHs, 8082 PCBs, 608 TTO, RCRA Metals (8), TCLP Metals (8), Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn, TOTAL DISS TCLP, 1200-COLS

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other:

SPECIAL INSTRUCTIONS: See permit for specific PCBs, Pesticides, PAHs

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: [signature] Date: 04/29/13 Time: Printed Name: Scott A. de Ridder Company: Calbag Metals

RECEIVED BY: Signature: [signature] Date: 4/29/13 Time: 06:30 Printed Name: R Lomeroe Company: APEX

RELINQUISHED BY: Signature: Date: Printed Name: Time: Company:

RECEIVED BY: Signature: Date: Printed Name: Time: Company:

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Monday, June 3, 2013

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: NPDES 1200-Z Industrial Stormwater-Special Request / 5

Enclosed are the results of analyses for work order A3E0532, which was received by the laboratory on 5/21/2013 at 4:10:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number:	5/21/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	06/03/13 16:58

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DA3052113G	A3E0532-01	Water	05/21/13 14:20	05/21/13 16:10

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Calbag Metals	Project:	**NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number:	5/21/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	06/03/13 16:58

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3052113G (A3E0532-01)			**Matrix: Water**		**Batch: 3050716**			**C-07**
Aroclor 1016	ND	0.00990	0.0198	ug/L	1	05/30/13 13:11	EPA 8082A	
Aroclor 1221	ND	0.00990	0.0198	"	"	"	"	
Aroclor 1232	ND	0.00990	0.0198	"	"	"	"	
Aroclor 1242	**0.0441**	0.00990	0.0198	"	"	"	"	EST
Aroclor 1248	ND	0.00990	0.0198	"	"	"	"	
Aroclor 1254	**0.0635**	0.00990	0.0198	"	"	"	"	EST
Aroclor 1260	**0.0277**	0.00990	0.0198	"	"	"	"	EST
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 57 %*	*Limits: 40-135 %*	"	"	"	

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3052113G (A3E0532-01RE1)			**Matrix: Water**		**Batch: 3050756**			**C-05**
Aldrin	ND	0.0288	0.0577	ug/L	1	05/31/13 14:58	EPA 608	
4,4'-DDE	ND	0.00481	0.00962	"	"	"	"	
4,4'-DDT	ND	0.0288	0.0577	"	"	"	"	
Dieldrin	ND	0.0192	0.0385	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)		*Recovery: 79 %*		*Limits: 25-140 %*	"	"	"	
Decachlorobiphenyl (Surr)		*88 %*		*Limits: 30-135 %*	"	"	"	

Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3052113G (A3E0532-01RE1)			**Matrix: Water**		**Batch: 3050573**			**R-04**
Acenaphthene	ND	0.100	0.200	ug/L	10	05/23/13 23:07	EPA 625	
Anthracene	ND	0.100	0.200	"	"	"	"	
Benz(a)anthracene	**0.104**	0.100	0.200	"	"	"	"	J
Benzo(a)pyrene	**0.227**	0.150	0.300	"	"	"	"	J
Benzo(b)fluoranthene	**0.276**	0.150	0.300	"	"	"	"	J
Chrysene	**0.130**	0.100	0.200	"	"	"	"	J
Dibenz(a,h)anthracene	ND	0.100	0.200	"	"	"	"	
Fluoranthene	**0.166**	0.100	0.200	"	"	"	"	J
Fluorene	ND	0.100	0.200	"	"	"	"	
Indeno(1,2,3-cd)pyrene	**0.118**	0.100	0.200	"	"	"	"	J
Pyrene	**0.138**	0.100	0.200	"	"	"	"	J
Pentachlorophenol (PCP)	ND	2.50	5.00	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 56 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*62 %*	*Limits: 45-120 %*	"	"	"	
Phenol-d6 (Surr)			*23 %*	*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*72 %*	*Limits: 30-125 %*	"	"	"	
2-Fluorophenol (Surr)			*30 %*	*Limits: 20-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*108 %*	*Limits: 35-125 %*	"	"	"	

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3052113G (A3E0532-01)			**Matrix: Water**					
Batch: 3050676								
Aluminum	**799**	25.0	50.0	ug/L	1	05/29/13 12:41	EPA 200.8	
Cadmium	**1.54**	0.500	1.00	"	"	"	"	
Chromium	**6.22**	0.400	2.00	"	"	05/29/13 17:07	"	
Copper	**203**	1.00	2.00	"	"	"	"	
Iron	**1980**	25.0	50.0	"	"	"	"	
Lead	**59.5**	0.500	1.00	"	"	05/29/13 12:41	"	
Mercury	**0.213**	0.0400	0.0800	"	"	"	"	
Nickel	**22.8**	0.500	2.00	"	"	05/29/13 17:07	"	
Zinc	**123**	2.00	4.00	"	"	05/30/13 17:21	"	

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3052113G (A3E0532-01)			**Matrix: Water**					
Batch: 3050529								
pH	**7.00**	---		pH Units	1	05/22/13 09:32	EPA 150.1	
pH Temperature (deg C)	**18.3**	---		"	"	"	"	
Batch: 3050624								
Total Suspended Solids	**19.0**	---	5.00	mg/L	"	05/24/13 13:05	SM 2540 D	
Batch: 3050652								
Chemical Oxygen Demand	**66.7**	5.58	10.0	"	"	05/24/13 17:55	EPA 410.4	
Batch: 3050774								
HEM (Oil and Grease)	ND	---	4.85	"	"	06/01/13 11:35	EPA 1664	

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050716 - EPA 3510C (Neutral pH)							**Water**					
Blank (3050716-BLK1)					Prepared: 05/29/13 11:03		Analyzed: 05/30/13 11:59					**C-07**
EPA 8082A												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 82 %*	*Limits: 40-135 %*		*Dilution: 1x*						
LCS (3050716-BS1)					Prepared: 05/29/13 11:03		Analyzed: 05/30/13 12:17					**C-07**
EPA 8082A												
Aroclor 1016	1.05	0.0100	0.0200	ug/L	1	1.25	---	84	40-140%	---	---	
Aroclor 1260	0.974	0.0100	0.0200	"	"	"	---	78	"	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 71 %*	*Limits: 40-135 %*		*Dilution: 1x*						
LCS Dup (3050716-BSD1)					Prepared: 05/29/13 11:03		Analyzed: 05/30/13 12:35					**C-07, Q-19**
EPA 8082A												
Aroclor 1016	1.15	0.0100	0.0200	ug/L	1	1.25	---	92	40-140%	9	30%	
Aroclor 1260	1.08	0.0100	0.0200	"	"	"	---	87	"	11	30%	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 76 %*	*Limits: 40-135 %*		*Dilution: 1x*						

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050756 - EPA 3510C (Neutral pH)							**Water**					
Blank (3050756-BLK1)						Prepared: 05/28/13 11:07	Analyzed: 05/31/13 11:59					**C-05**
EPA 608												
Aldrin	ND	0.0273	0.0545	ug/L	1	---	---	---	---	---	---	
4,4'-DDE	ND	0.00455	0.00909	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*70 %*	*Limits:*	*25-140 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*78 %*		*30-135 %*		*"*					
LCS (3050756-BS1)						Prepared: 05/28/13 11:07	Analyzed: 05/31/13 12:17					**C-05**
EPA 608												
Aldrin	0.400	0.0300	0.0600	ug/L	1	0.500	---	80	25-140%	---	---	
4,4'-DDE	0.454	0.00500	0.0100	"	"	"	---	91	35-140%	---	---	
4,4'-DDT	0.505	0.0300	0.0600	"	"	"	---	101	45-140%	---	---	
Dieldrin	0.481	0.0200	0.0400	"	"	"	---	96	60-130%	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*68 %*	*Limits:*	*25-140 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*83 %*		*30-135 %*		*"*					
LCS Dup (3050756-BSD1)						Prepared: 05/28/13 11:07	Analyzed: 05/31/13 12:35					**C-05, Q-19**
EPA 608												
Aldrin	0.364	0.0300	0.0600	ug/L	1	0.500	---	73	25-140%	10	30%	
4,4'-DDE	0.455	0.00500	0.0100	"	"	"	---	91	35-140%	0.3	30%	
4,4'-DDT	0.527	0.0300	0.0600	"	"	"	---	105	45-140%	4	30%	
Dieldrin	0.470	0.0200	0.0400	"	"	"	---	94	60-130%	2	30%	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*63 %*	*Limits:*	*25-140 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*79 %*		*30-135 %*		*"*					

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050573 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3050573-BLK1)						Prepared: 05/23/13 07:07	Analyzed: 05/23/13 13:33					
EPA 625												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*91 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*70 %*		*45-120 %*		*"*					
Phenol-d6 (Surr)			*33 %*		*10-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*85 %*		*30-125 %*		*"*					
2-Fluorophenol (Surr)			*45 %*		*20-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*88 %*		*35-125 %*		*"*					
LCS (3050573-BS1)						Prepared: 05/23/13 07:07	Analyzed: 05/23/13 14:09					
EPA 625												
Acenaphthene	2.29	0.0100	0.0200	ug/L	1	4.00	---	57	47-145%	---	---	
Anthracene	3.51	0.0100	0.0200	"	"	"	---	88	27-133%	---	---	
Benz(a)anthracene	3.76	0.0100	0.0200	"	"	"	---	94	33-143%	---	---	
Benzo(a)pyrene	3.88	0.0150	0.0300	"	"	"	---	97	17-163%	---	---	
Benzo(b)fluoranthene	3.80	0.0150	0.0300	"	"	"	---	95	24-159%	---	---	
Benzo(k)fluoranthene	3.71	0.0150	0.0300	"	"	"	---	93	11-162%	---	---	
Benzo(b+k)fluoranthene(s)	7.63	0.0300	0.0600	"	"	8.00	---	95	"	---	---	
Chrysene	3.69	0.0100	0.0200	"	"	4.00	---	92	17-168%	---	---	

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Calbag Metals	Project:	**NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number:	5/21/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Batch 3050573 - EPA 3510C (Acid Extraction) — **Water**

LCS (3050573-BS1) Prepared: 05/23/13 07:07 Analyzed: 05/23/13 14:09

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Dibenz(a,h)anthracene	4.11	0.0100	0.0200	ug/L	"	"	---	103	1-227%	---	---	
Fluoranthene	3.83	0.0100	0.0200	"	"	"	---	96	26-137%	---	---	
Fluorene	2.87	0.0100	0.0200	"	"	"	---	72	59-121%	---	---	
Indeno(1,2,3-cd)pyrene	4.06	0.0100	0.0200	"	"	"	---	101	1-171%	---	---	
Pyrene	3.74	0.0100	0.0200	"	"	"	---	94	52-115%	---	---	
Pentachlorophenol (PCP)	3.79	0.250	0.500	"	"	"	---	95	14-176%	---	---	

Surr: Nitrobenzene-d5 (Surr)	*Recovery: 94 %*	*Limits: 35-120 %*	*Dilution: 1x*
2-Fluorobiphenyl (Surr)	*68 %*	*45-120 %*	*"*
Phenol-d6 (Surr)	*33 %*	*10-120 %*	*"*
p-Terphenyl-d14 (Surr)	*88 %*	*30-125 %*	*"*
2-Fluorophenol (Surr)	*46 %*	*20-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*92 %*	*35-125 %*	*"*

LCS Dup (3050573-BSD1) Prepared: 05/23/13 07:07 Analyzed: 05/23/13 14:45 **Q-19**

EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	2.90	0.0100	0.0200	ug/L	1	4.00	---	72	47-145%	24	30%	
Anthracene	3.58	0.0100	0.0200	"	"	"	---	89	27-133%	2	30%	
Benz(a)anthracene	3.84	0.0100	0.0200	"	"	"	---	96	33-143%	2	30%	
Benzo(a)pyrene	3.90	0.0150	0.0300	"	"	"	---	97	17-163%	0.5	30%	
Benzo(b)fluoranthene	3.88	0.0150	0.0300	"	"	"	---	97	24-159%	2	30%	
Benzo(k)fluoranthene	3.86	0.0150	0.0300	"	"	"	---	96	11-162%	4	30%	
Benzo(b+k)fluoranthene(s)	7.75	0.0300	0.0600	"	"	8.00	---	97	"	2	30%	
Chrysene	3.76	0.0100	0.0200	"	"	4.00	---	94	17-168%	2	30%	
Dibenz(a,h)anthracene	4.17	0.0100	0.0200	"	"	"	---	104	1-227%	1	30%	
Fluoranthene	3.89	0.0100	0.0200	"	"	"	---	97	26-137%	1	30%	
Fluorene	3.25	0.0100	0.0200	"	"	"	---	81	59-121%	13	30%	
Indeno(1,2,3-cd)pyrene	4.10	0.0100	0.0200	"	"	"	---	102	1-171%	1	30%	
Pyrene	3.80	0.0100	0.0200	"	"	"	---	95	52-115%	1	30%	
Pentachlorophenol (PCP)	3.89	0.250	0.500	"	"	"	---	97	14-176%	3	30%	

Surr: Nitrobenzene-d5 (Surr)	*Recovery: 98 %*	*Limits: 35-120 %*	*Dilution: 1x*
2-Fluorobiphenyl (Surr)	*74 %*	*45-120 %*	*"*
Phenol-d6 (Surr)	*35 %*	*10-120 %*	*"*
p-Terphenyl-d14 (Surr)	*89 %*	*30-125 %*	*"*

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050573 - EPA 3510C (Acid Extraction)							Water					
LCS Dup (3050573-BSD1)					Prepared: 05/23/13 07:07		Analyzed: 05/23/13 14:45					**Q-19**
Surr: 2-Fluorophenol (Surr)		*Recovery: 48 %*		*Limits: 20-120 %*			*Dilution: 1x*					
2,4,6-Tribromophenol (Surr)		*93 %*		*35-125 %*			*"*					

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PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050676 - EPA 3015A							**Water**					
Blank (3050676-BLK1)						Prepared: 05/28/13 13:20	Analyzed: 05/29/13 11:15					
EPA 200.8												
Aluminum	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Chromium	ND	0.400	2.00	"	"	---	---	---	---	---	---	
Copper	ND	1.00	2.00	"	"	---	---	---	---	---	---	
Iron	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Lead	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Nickel	ND	0.500	2.00	"	"	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	
LCS (3050676-BS1)						Prepared: 05/28/13 13:20	Analyzed: 05/29/13 11:18					
EPA 200.8												
Aluminum	5550	25.0	50.0	ug/L	1	5560	---	100	85-115%	---	---	
Cadmium	52.3	0.500	1.00	"	"	55.6	---	94	"	---	---	
Chromium	52.1	0.400	2.00	"	"	"	---	94	"	---	---	
Copper	51.2	1.00	2.00	"	"	"	---	92	"	---	---	
Iron	5510	25.0	50.0	"	"	5560	---	99	"	---	---	
Lead	51.5	0.500	1.00	"	"	55.6	---	93	"	---	---	
Mercury	0.996	0.0400	0.0800	"	"	1.11	---	90	"	---	---	
Nickel	51.4	0.500	2.00	"	"	55.6	---	93	"	---	---	
Zinc	51.6	2.00	4.00	"	"	"	---	93	"	---	---	

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PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050529 - Method Prep: Aq							**Water**					
Duplicate (3050529-DUP2)						Prepared: 05/22/13 08:02	Analyzed: 05/22/13 09:35					
QC Source Sample: DA3052113G (A3E0532-01)												
EPA 150.1												
pH	**6.94**	---		pH Units	1	---	7.00	---	---	0.9	10%	
pH Temperature (deg C)	**18.1**	---		"	"	---	18.3	---	---	1	30%	
Reference (3050529-SRM1)						Prepared: 05/22/13 08:02	Analyzed: 05/22/13 09:10					
EPA 150.1												
pH	6.06	---		pH Units	1	6.00		101	98.4-101.7%	---	---	
Reference (3050529-SRM2)						Prepared: 05/22/13 08:02	Analyzed: 05/22/13 09:29					
EPA 150.1												
pH	8.03	---		pH Units	1	8.00		100	98.4-101.7%	---	---	
Reference (3050529-SRM3)						Prepared: 05/22/13 08:02	Analyzed: 05/22/13 09:36					
EPA 150.1												
pH	6.09	---		pH Units	1	6.00		102	98.4-101.7%	---	---	
Reference (3050529-SRM4)						Prepared: 05/22/13 09:54	Analyzed: 05/22/13 10:03					
EPA 150.1												
pH	8.00	---		pH Units	1	8.00		100	98.4-101.7%	---	---	
Reference (3050529-SRM5)						Prepared: 05/22/13 16:09	Analyzed: 05/22/13 16:11					
EPA 150.1												
pH	6.02	---		pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (3050529-SRM6)						Prepared: 05/22/13 16:09	Analyzed: 05/22/13 16:26					
EPA 150.1												
pH	8.01	---		pH Units	1	8.00		100	98.4-101.7%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050624 - Total Suspended Solids							**Water**					
Blank (3050624-BLK1)						Prepared: 05/24/13 10:00	Analyzed: 05/24/13 13:05					
SM 2540 D												
Total Suspended Solids	ND	---	5.00	mg/L	1	---	---	---	---	---	---	
Reference (3050624-SRM1)						Prepared: 05/24/13 10:00	Analyzed: 05/24/13 13:05					
SM 2540 D												
Total Suspended Solids	96.0	---		mg/L	1	100		96	90-110%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050652 - Method Prep: Aq						**Water**						
Blank (3050652-BLK1)					Prepared: 05/24/13 14:19	Analyzed: 05/24/13 17:55						
EPA 410.4												
Chemical Oxygen Demand	ND	5.58	10.0	mg/L	1	---	---	---	---	---	---	
LCS (3050652-BS1)					Prepared: 05/24/13 14:19	Analyzed: 05/24/13 17:55						
EPA 410.4												
Chemical Oxygen Demand	52.2	5.58	10.0	mg/L	1	50.0	---	104	90-110%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

12232 S.W. Garden Place
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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3050774 - EPA 1664						**Water**						
Blank (3050774-BLK1)					Prepared: 05/31/13 15:30	Analyzed: 06/01/13 11:35						
EPA 1664												
HEM (Oil and Grease)	ND	---	4.55	mg/L	1	---	---	---	---	---	---	
LCS (3050774-BS1)					Prepared: 05/31/13 15:30	Analyzed: 06/01/13 11:35						
EPA 1664												
HEM (Oil and Grease)	39.7	---		mg/L	1	40.0	---	99	78-114%	---	---	

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

Notes and Definitions

Qualifiers:

C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
EST	Result reported as an Estimated Value. Multiple aroclors present and matrix interference
J	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-16	Reanalysis of an original Batch QC sample.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
R-04	Reporting levels elevated due to dilution necessary for analysis.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **NPDES 1200-Z Industrial Stormwater-Special Request**	
PO Box 10067	Project Number: 5/21/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	06/03/13 16:58

APEX LABS **CHAIN OF CUSTODY** Lab # A3E0532 COC ___ of ___

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag PDX Project Mgr: Scott De Ridder Project Name: Project #:

Address: Phone: Fax: Email:

Sampled by:

Site Location: OR WA Other: ______

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200-COLS	1200-Z
1	DA3052136		5/21/13	1420																	
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Normal Turn Around Time (TAT) = 7-10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ______

SAMPLES ARE HELD FOR 30 DAYS YES NO

SPECIAL INSTRUCTIONS:

RELINQUISHED BY: Signature: Date: Printed Name: Dan Foss Time: 1530 Company:

RECEIVED BY: Signature: Date: 5/21/13 Printed Name: T. Smith Time: 15:30 Company:

RELINQUISHED BY: Signature: Date: Printed Name: Time: Company:

RECEIVED BY: Signature: Date: Printed Name: Time: Company:

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Brian Cone, Industrial Services Manager

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Friday, January 24, 2014

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater / 1200Z 11/2/13

Enclosed are the results of analyses for work order A3K0134, which was received by the laboratory on 11/4/2013 at 12:30:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

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Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SCE110113G01E	A3K0134-01	Water	11/02/13 02:41	11/04/13 12:30

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/24/14 14:24

ANALYTICAL CASE NARRATIVE

Work Order: A3K0134

Amended Report Revision 1

Additional Analysis:

This report has been amended to include 8270D PAH/PTH/Phenols (JSCS) results for sample ID: SCE110113G01E (Apex Lab ID: A3K0134-01) with a X10 dilution.

Brian Cone
Industrial Program Manager
11/22/13

Amended Report Revision 2

Updated Results:

This report has been amended to include only results that are specifically listed on the COC for sample SCE110113G01E (A3K0134-01). Only pentachlorophenol is reported for the 625 method.

Brian Cone
Industrial Program Manager
1/24/14

Apex Labs

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0134-01RE1)			**Matrix: Water**		**Batch: 3110296**			**C-05**
Aldrin	ND	0.0294	0.0588	ug/L	1	11/12/13 18:04	EPA 608	
4,4'-DDE	ND	0.00490	0.00980	"	"	"	"	
4,4'-DDT	ND	0.0294	0.0588	"	"	"	"	
Dieldrin	ND	0.0196	0.0392	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)		*Recovery: 67 %*	*Limits: 25-140 %*		"	"	"	
Decachlorobiphenyl (Surr)		*91 %*	*Limits: 30-135 %*		"	"	"	

Apex Laboratories

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/24/14 14:24

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0134-01RE1)			**Matrix: Water**		**Batch: 3110231**			**R-04**
Pentachlorophenol (PCP)	ND	2.43	4.85	ug/L	10	11/20/13 23:57	EPA 8270D P/P/P	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 51 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*61 %*	*Limits: 30-120 %*	"	"	"	
Phenol-d6 (Surr)			*24 %*	*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*56 %*	*Limits: 50-125 %*	"	"	"	
2-Fluorophenol (Surr)			*29 %*	*Limits: 15-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*121 %*	*Limits: 35-125 %*	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0134-01)			**Matrix: Water**					
Batch: 3110355								
Iron	**0.600**	---	0.0500	mg/L	1	11/13/13 14:17	EPA 200.8	

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Calbag Metals PO Box 10067 Portland, OR 97296	Project: **Stormwater** Project Number: 1200Z 11/2/13 Project Manager: Scott A. de Ridder	**Reported:** 01/24/14 14:24

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0134-01)			**Matrix: Water**					
Batch: 3110286								
HEM (Oil and Grease)	ND	---	4.90	mg/L	1	11/12/13 12:52	EPA 1664	
Batch: 3110317								
Chemical Oxygen Demand	**47.3**	---	10.0	"	"	11/12/13 12:15	EPA 410.4	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110296 - EPA 3510C (Neutral pH)/3640A (GPC)							**Water**					
Blank (3110296-BLK1)						Prepared: 11/09/13 10:19	Analyzed: 11/12/13 10:00					**C-05**
EPA 608												
Aldrin	ND	0.0273	0.0545	ug/L	1	---	---	---	---	---	---	
4,4'-DDE	ND	0.00455	0.00909	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*80 %*	*Limits: 25-140 %*			*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*101 %*	*30-135 %*			*"*					
LCS (3110296-BS1)						Prepared: 11/09/13 10:28	Analyzed: 11/12/13 10:17					**C-05**
EPA 608												
Aldrin	0.431	0.0300	0.0600	ug/L	1	0.500	---	86	25-140%	---	---	
4,4'-DDE	0.472	0.00500	0.0100	"	"	"	---	94	35-140%	---	---	
4,4'-DDT	0.572	0.0300	0.0600	"	"	"	---	114	45-140%	---	---	
Dieldrin	0.463	0.0200	0.0400	"	"	"	---	93	60-130%	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*84 %*	*Limits: 25-140 %*			*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*99 %*	*30-135 %*			*"*					
LCS Dup (3110296-BSD1)						Prepared: 11/09/13 10:28	Analyzed: 11/12/13 10:35					**C-05, Q-19**
EPA 608												
Aldrin	0.395	0.0300	0.0600	ug/L	1	0.500	---	79	25-140%	9	30%	
4,4'-DDE	0.456	0.00500	0.0100	"	"	"	---	91	35-140%	4	30%	
4,4'-DDT	0.562	0.0300	0.0600	"	"	"	---	112	45-140%	2	30%	
Dieldrin	0.460	0.0200	0.0400	"	"	"	---	92	60-130%	0.7	30%	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*73 %*	*Limits: 25-140 %*			*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*96 %*	*30-135 %*			*"*					

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Calbag Metals	Project: **Stormwater**		
PO Box 10067	Project Number: 1200Z 11/2/13		**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder		01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3110231-BLK1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:12					
EPA 8270D P/P/P												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Carbazole	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Chlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	0.545	1.09	"	"	---	---	---	---	---	---	
2-Methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Nitrophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3110231-BLK1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:12					
4-Nitrophenol	ND	0.227	0.455	ug/L	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Phenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,3,5,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	1.00	2.00	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*70 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*52 %*		*30-120 %*		*"*					
Phenol-d6 (Surr)			*27 %*		*10-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*82 %*		*50-125 %*		*"*					
2-Fluorophenol (Surr)			*42 %*		*15-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*64 %*		*35-125 %*		*"*					
LCS (3110231-BS1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:47					
EPA 8270D P/P/P												
Acenaphthene	3.22	0.0100	0.0200	ug/L	1	4.00	---	80	45-125%	---	---	
Acenaphthylene	3.32	0.0100	0.0200	"	"	"	---	83	50-125%	---	---	
Anthracene	3.93	0.0100	0.0200	"	"	"	---	98	55-125%	---	---	
Benz(a)anthracene	4.49	0.0100	0.0200	"	"	"	---	112	"	---	---	
Benzo(a)pyrene	4.33	0.0150	0.0300	"	"	"	---	108	"	---	---	
Benzo(b)fluoranthene	4.18	0.0150	0.0300	"	"	"	---	105	45-125%	---	---	
Benzo(k)fluoranthene	4.10	0.0150	0.0300	"	"	"	---	102	"	---	---	
Benzo(b+k)fluoranthene(s)	8.30	0.0300	0.0600	"	"	8.00	---	104	"	---	---	
Benzo(g,h,i)perylene	4.05	0.0100	0.0200	"	"	4.00	---	101	40-125%	---	---	
Chrysene	4.24	0.0100	0.0200	"	"	"	---	106	55-125%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
LCS (3110231-BS1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:47					
Dibenz(a,h)anthracene	4.29	0.0100	0.0200	ug/L	"	"	---	107	40-125%	---	---	
Fluoranthene	4.24	0.0100	0.0200	"	"	"	---	106	55-125%	---	---	
Fluorene	3.69	0.0100	0.0200	"	"	"	---	92	50-125%	---	---	
Indeno(1,2,3-cd)pyrene	4.29	0.0100	0.0200	"	"	"	---	107	45-125%	---	---	
1-Methylnaphthalene	3.01	0.0200	0.0400	"	"	"	---	75	45-120%	---	---	
2-Methylnaphthalene	2.98	0.0200	0.0400	"	"	"	---	74	"	---	---	
Naphthalene	2.70	0.0200	0.0400	"	"	"	---	68	40-125%	---	---	
Phenanthrene	3.84	0.0100	0.0200	"	"	"	---	96	50-125%	---	---	
Pyrene	4.21	0.0100	0.0200	"	"	"	---	105	"	---	---	
Carbazole	3.67	0.0150	0.0300	"	"	"	---	92	"	---	---	
Dibenzofuran	3.27	0.0100	0.0200	"	"	"	---	82	55-125%	---	---	
4-Chloro-3-methylphenol	3.86	0.250	0.500	"	"	"	---	97	45-120%	---	---	
2-Chlorophenol	3.34	0.250	0.500	"	"	"	---	83	35-120%	---	---	
2,4-Dichlorophenol	3.36	0.250	0.500	"	"	"	---	84	50-120%	---	---	
2,4-Dimethylphenol	3.24	0.250	0.500	"	"	"	---	81	30-120%	---	---	
2,4-Dinitrophenol	3.69	0.500	1.00	"	"	"	---	92	15-130%	---	---	
4,6-Dinitro-2-methylphenol	3.56	0.600	1.20	"	"	"	---	89	40-135%	---	---	
2-Methylphenol	2.92	0.250	0.500	"	"	"	---	73	40-120%	---	---	
3+4-Methylphenol(s)	2.92	0.250	0.500	"	"	"	---	73	30-120%	---	---	
2-Nitrophenol	3.34	0.250	0.500	"	"	"	---	84	40-120%	---	---	
4-Nitrophenol	1.44	0.250	0.500	"	"	"	---	36	10-140%	---	---	
Pentachlorophenol (PCP)	3.66	0.250	0.500	"	"	"	---	92	40-125%	---	---	
Phenol	1.47	0.500	1.00	"	"	"	---	37	10-120%	---	---	
2,3,4,6-Tetrachlorophenol	3.40	0.250	0.500	"	"	"	---	85	40-120%	---	---	
2,3,5,6-Tetrachlorophenol	3.41	0.250	0.500	"	"	"	---	85	"	---	---	
2,4,5-Trichlorophenol	3.39	0.250	0.500	"	"	"	---	85	50-120%	---	---	
2,4,6-Trichlorophenol	3.24	0.250	0.500	"	"	"	---	81	"	---	---	
Bis(2-ethylhexyl)phthalate	4.99	1.10	2.20	"	"	"	---	125	40-125%	---	---	
Butyl benzyl phthalate	5.30	1.50	3.00	"	"	"	---	133	45-125%	---	---	Q-29
Diethylphthalate	4.43	1.50	3.00	"	"	"	---	111	40-125%	---	---	
Dimethylphthalate	3.89	1.50	3.00	"	"	"	---	97	25-125%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
LCS (3110231-BS1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:47					
Di-n-butylphthalate	5.09	1.50	3.00	ug/L	"	"	---	127	55-125%	---	---	Q-29
Di-n-octyl phthalate	5.23	1.50	3.00	"	"	"	---	131	35-125%	---	---	Q-29
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*95 %*	*Limits: 35-120 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*75 %*	*30-120 %*		*"*						
Phenol-d6 (Surr)			*36 %*	*10-120 %*		*"*						
p-Terphenyl-d14 (Surr)			*106 %*	*50-125 %*		*"*						
2-Fluorophenol (Surr)			*55 %*	*15-120 %*		*"*						
2,4,6-Tribromophenol (Surr)			*83 %*	*35-125 %*		*"*						
LCS Dup (3110231-BSD1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 21:23					
EPA 8270D P/P/P												
Acenaphthene	3.88	0.0100	0.0200	ug/L	1	4.00	---	97	45-125%	19	30%	
Acenaphthylene	3.87	0.0100	0.0200	"	"	"	---	97	50-125%	15	30%	
Anthracene	4.30	0.0100	0.0200	"	"	"	---	107	55-125%	9	30%	
Benz(a)anthracene	4.66	0.0100	0.0200	"	"	"	---	117	"	4	30%	
Benzo(a)pyrene	4.53	0.0150	0.0300	"	"	"	---	113	"	4	30%	
Benzo(b)fluoranthene	4.26	0.0150	0.0300	"	"	"	---	107	45-125%	2	30%	
Benzo(k)fluoranthene	4.23	0.0150	0.0300	"	"	"	---	106	"	3	30%	
Benzo(b+k)fluoranthene(s)	8.50	0.0300	0.0600	"	"	8.00	---	106	"	2	30%	
Benzo(g,h,i)perylene	4.20	0.0100	0.0200	"	"	4.00	---	105	40-125%	4	30%	
Chrysene	4.41	0.0100	0.0200	"	"	"	---	110	55-125%	4	30%	
Dibenz(a,h)anthracene	4.50	0.0100	0.0200	"	"	"	---	113	40-125%	5	30%	
Fluoranthene	4.36	0.0100	0.0200	"	"	"	---	109	55-125%	3	30%	
Fluorene	4.14	0.0100	0.0200	"	"	"	---	103	50-125%	11	30%	
Indeno(1,2,3-cd)pyrene	4.43	0.0100	0.0200	"	"	"	---	111	45-125%	3	30%	
1-Methylnaphthalene	3.78	0.0200	0.0400	"	"	"	---	94	45-120%	23	30%	
2-Methylnaphthalene	3.90	0.0200	0.0400	"	"	"	---	98	"	27	30%	
Naphthalene	3.49	0.0200	0.0400	"	"	"	---	87	40-125%	25	30%	
Phenanthrene	4.09	0.0100	0.0200	"	"	"	---	102	50-125%	6	30%	
Pyrene	4.40	0.0100	0.0200	"	"	"	---	110	"	4	30%	
Carbazole	3.92	0.0150	0.0300	"	"	"	---	98	"	7	30%	
Dibenzofuran	3.76	0.0100	0.0200	"	"	"	---	94	55-125%	14	30%	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Batch 3110231 - EPA 3510C (Acid Extraction) — **Water**

LCS Dup (3110231-BSD1) — Prepared: 11/08/13 07:31 Analyzed: 11/08/13 21:23

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
4-Chloro-3-methylphenol	4.33	0.250	0.500	ug/L	"	"	---	108	45-120%	12	30%	
2-Chlorophenol	3.81	0.250	0.500	"	"	"	---	95	35-120%	13	30%	
2,4-Dichlorophenol	3.79	0.250	0.500	"	"	"	---	95	50-120%	12	30%	
2,4-Dimethylphenol	3.69	0.250	0.500	"	"	"	---	92	30-120%	13	30%	
2,4-Dinitrophenol	3.92	0.500	1.00	"	"	"	---	98	15-130%	6	30%	
4,6-Dinitro-2-methylphenol	3.83	0.600	1.20	"	"	"	---	96	40-135%	7	30%	
2-Methylphenol	3.26	0.250	0.500	"	"	"	---	82	40-120%	11	30%	
3+4-Methylphenol(s)	3.31	0.250	0.500	"	"	"	---	83	30-120%	12	30%	
2-Nitrophenol	3.86	0.250	0.500	"	"	"	---	96	40-120%	14	30%	
4-Nitrophenol	1.43	0.250	0.500	"	"	"	---	36	10-140%	0.4	30%	
Pentachlorophenol (PCP)	3.83	0.250	0.500	"	"	"	---	96	40-125%	4	30%	
Phenol	1.65	0.500	1.00	"	"	"	---	41	10-120%	11	30%	
2,3,4,6-Tetrachlorophenol	3.78	0.250	0.500	"	"	"	---	94	40-120%	11	30%	
2,3,5,6-Tetrachlorophenol	3.72	0.250	0.500	"	"	"	---	93	"	9	30%	
2,4,5-Trichlorophenol	3.91	0.250	0.500	"	"	"	---	98	50-120%	14	30%	
2,4,6-Trichlorophenol	3.71	0.250	0.500	"	"	"	---	93	"	14	30%	
Bis(2-ethylhexyl)phthalate	5.18	1.10	2.20	"	"	"	---	130	40-125%	4	30%	Q-29
Butyl benzyl phthalate	5.50	1.50	3.00	"	"	"	---	137	45-125%	4	30%	Q-29
Diethylphthalate	4.83	1.50	3.00	"	"	"	---	121	40-125%	9	30%	
Dimethylphthalate	4.32	1.50	3.00	"	"	"	---	108	25-125%	10	30%	
Di-n-butylphthalate	5.50	1.50	3.00	"	"	"	---	137	55-125%	8	30%	Q-29
Di-n-octyl phthalate	5.40	1.50	3.00	"	"	"	---	135	35-125%	3	30%	Q-29

Surr:	Recovery:	Limits:	Dilution:
Nitrobenzene-d5 (Surr)	*110 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*94 %*	*30-120 %*	*"*
Phenol-d6 (Surr)	*41 %*	*10-120 %*	*"*
p-Terphenyl-d14 (Surr)	*114 %*	*50-125 %*	*"*
2-Fluorophenol (Surr)	*63 %*	*15-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*93 %*	*35-125 %*	*"*

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110355 - EPA 3015A							**Water**					
Blank (3110355-BLK1)						Prepared: 11/12/13 17:28 Analyzed: 11/13/13 13:13						
EPA 200.8												
Iron	ND	---	0.0500	mg/L	1	---	---	---	---	---	---	
LCS (3110355-BS1)						Prepared: 11/12/13 17:28 Analyzed: 11/13/13 13:16						
EPA 200.8												
Iron	5.58	---	0.0500	mg/L	1	5.56	---	100	85-115%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110286 - EPA 1664							**Water**					
Blank (3110286-BLK1)						Prepared: 11/11/13 08:48	Analyzed: 11/12/13 12:52					
EPA 1664												
HEM (Oil and Grease)	ND	---	4.55	mg/L	1	---	---	---	---	---	---	
LCS (3110286-BS1)						Prepared: 11/11/13 08:48	Analyzed: 11/12/13 12:52					
EPA 1664												
HEM (Oil and Grease)	37.6	---		mg/L	1	40.0	---	94	78-114%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110317 - Method Prep: Aq						**Water**						
Blank (3110317-BLK1)						Prepared: 11/12/13 06:56 Analyzed: 11/12/13 12:15						
EPA 410.4												
Chemical Oxygen Demand	ND	---	10.0	mg/L	1	---	---	---	---	---	---	
LCS (3110317-BS1)						Prepared: 11/12/13 06:56 Analyzed: 11/12/13 12:15						
EPA 410.4												
Chemical Oxygen Demand	52.1	---	10.0	mg/L	1	50.0	---	104	90-110%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

Notes and Definitions

Qualifiers:

C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-29	Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
R-04	Reporting levels elevated due to dilution necessary for analysis.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: 1200Z 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/24/14 14:24

APEX LABS — **CHAIN OF CUSTODY** — Lab # A3K0134 — COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals Co. Project Mgr: B. Cone Project Name: 1200Z Project #

Address: 2495 NW Nicolai Street, Portland, OR 97210 Phone: 503 226 3441 Fax: — Email: scott.deridder@calbag.com

Sampled by: SA de Ridder

Site Location: OR WA Other:

ANALYSIS REQUEST: NWTPH-HCID, NWTPH-Dx, NWTPH-Gx, 8260 VOC, 8260 RBDM VOCs, 8260 BTEX, 8270 SVOC, 8270 SIM PAHs, 8082 PCBs, 600 TTO, RCRA Metals (8), TCLP Metals (8), Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP, 1200-COLS, 1200-Z, O&G, PCP, COD, Pesticides

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	Metals (TOTAL)	O&G	PCP	COD	Pesticides
SCE 110113 G01E		11/1/13	1420	W	9	✓	✓	✓	✓	✓

Pesticides = Aldrin, Dieldrin, DDT, DDE

SPECIAL INSTRUCTIONS:
- MDL's/MRL's must satisfy 1200Z permit requirements.
- This is a partial list of 1200Z parameters. Only analyze for the parameters shown in this report. Remaining 1200Z parameters to be reported as part of SCE project.

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: [signature] Date: 11/4/13 Printed Name: Scott A. de Ridder Time: 1230 Company: Calbag

RECEIVED BY: Signature: [signature] Date: 11-4-13 Printed Name: Adam Peterson Time: 12:30 Company: Apex

RELINQUISHED BY: Signature: Date: Printed Name: Time: Company:

RECEIVED BY: Signature: Date: Printed Name: Time: Company:

Apex Labs

AMENDED REPORT

12232 S.W. Garden Place
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Tuesday, March 11, 2014

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater / SCE 11/2/13

Enclosed are the results of analyses for work order A3K0133, which was received by the laboratory on 11/4/2013 at 12:30:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SCE110113G01E	A3K0133-01	Water	11/02/13 02:41	11/04/13 12:30

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

ANALYTICAL CASE NARRATIVE

Work Order: A3K0133

Amended Report Revision 1:

This report supersedes all previously reported data.

This report has been amended, only the organic compounds that are listed in the Calbag Metals STORMWATER ASSESSMENT WORKPLAN have been reported.

Brian Cone
Industrial Project Manager
1/23/14

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AMENDED REPORT

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0133-01)			**Matrix: Water**		**Batch: 3110458**			**C-07**
Aroclor 1016	ND	0.00980	0.0196	ug/L	1	11/18/13 09:38	608 PCB	
Aroclor 1221	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1232	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1242	**0.0149**	0.00980	0.0196	"	"	"	"	J
Aroclor 1248	ND	0.00980	0.0196	"	"	"	"	
Aroclor 1254	**0.0208**	0.00980	0.0196	"	"	"	"	
Aroclor 1260	ND	0.00980	0.0196	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 72 %*	*Limits: 40-135 %*	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0133-01RE1)			**Matrix: Water**		**Batch: 3110231**			**R-04**
Acenaphthene	ND	0.0971	0.194	ug/L	10	11/20/13 23:20	EPA 8270D	
Acenaphthylene	ND	0.0971	0.194	"	"	"	"	
Anthracene	ND	0.0971	0.194	"	"	"	"	
Benz(a)anthracene	ND	0.0971	0.194	"	"	"	"	
Benzo(a)pyrene	ND	0.146	0.291	"	"	"	"	
Benzo(b)fluoranthene	ND	0.146	0.291	"	"	"	"	
Benzo(k)fluoranthene	ND	0.146	0.291	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.0971	0.194	"	"	"	"	
Chrysene	ND	0.0971	0.194	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0971	0.194	"	"	"	"	
Fluoranthene	ND	0.0971	0.194	"	"	"	"	
Fluorene	ND	0.0971	0.194	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0971	0.194	"	"	"	"	
2-Methylnaphthalene	ND	0.194	0.388	"	"	"	"	
Naphthalene	ND	0.194	0.388	"	"	"	"	
Phenanthrene	ND	0.0971	0.194	"	"	"	"	
Pyrene	ND	0.0971	0.194	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.7	21.4	"	"	"	"	
Butyl benzyl phthalate	ND	14.6	29.1	"	"	"	"	
Diethylphthalate	ND	14.6	29.1	"	"	"	"	
Dimethylphthalate	ND	14.6	29.1	"	"	"	"	
Di-n-butylphthalate	ND	14.6	29.1	"	"	"	"	
Di-n-octyl phthalate	ND	14.6	29.1	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)		*Recovery: 48 %*		*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)		*60 %*		*Limits: 30-120 %*	"	"	"	
Phenol-d6 (Surr)		*22 %*		*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)		*67 %*		*Limits: 50-125 %*	"	"	"	
2-Fluorophenol (Surr)		*28 %*		*Limits: 15-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)		*127 %*		*Limits: 35-125 %*	"	"	"	*S-06*

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AMENDED REPORT

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0133-01)			**Matrix: Water**					
Batch: 3110355								
Aluminum	**223**	25.0	50.0	ug/L	1	11/13/13 14:14	EPA 200.8	
Antimony	**1.67**	0.500	1.00	"	"	"	"	
Arsenic	**0.644**	0.500	1.00	"	"	"	"	J
Cadmium	**0.511**	0.0400	0.200	"	"	"	"	
Chromium	**2.47**	0.400	1.00	"	"	"	"	
Copper	**54.5**	0.500	1.00	"	"	"	"	
Lead	**20.7**	0.100	0.200	"	"	"	"	
Manganese	**6.79**	0.500	1.00	"	"	"	"	
Mercury	**0.0639**	0.0400	0.0800	"	"	"	"	J
Nickel	**9.02**	0.500	1.00	"	"	"	"	
Silver	ND	0.100	1.00	"	"	"	"	
Zinc	**36.8**	2.00	4.00	"	"	"	"	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE110113G01E (A3K0133-01)			**Matrix: Water**					
Batch: 3110147								
Total Suspended Solids	**6.00**	---	5.00	mg/L	1	11/07/13 09:40	SM 2540 D	
Batch: 3110364								
Total Organic Carbon	**16.5**	---	2.00	"	2	11/15/13 16:33	SM 5310 B	

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110458 - EPA 3510C (Neutral pH)							**Water**					
Blank (3110458-BLK1)						Prepared: 11/15/13 10:58	Analyzed: 11/18/13 08:44					**C-07**
608 PCB												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 82 %*	*Limits: 40-135 %*			*Dilution: 1x*					
LCS (3110458-BS1)						Prepared: 11/15/13 10:58	Analyzed: 11/18/13 09:02					**C-07**
608 PCB												
Aroclor 1016	0.828	0.0100	0.0200	ug/L	1	1.25	---	66	40-140%	---	---	
Aroclor 1260	0.760	0.0100	0.0200	"	"	"	---	61	"	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 81 %*	*Limits: 40-135 %*			*Dilution: 1x*					
LCS Dup (3110458-BSD1)						Prepared: 11/15/13 10:58	Analyzed: 11/18/13 09:20					**C-07, Q-19**
608 PCB												
Aroclor 1016	0.840	0.0100	0.0200	ug/L	1	1.25	---	67	40-140%	1	30%	
Aroclor 1260	0.786	0.0100	0.0200	"	"	"	---	63	"	3	30%	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 87 %*	*Limits: 40-135 %*			*Dilution: 1x*					

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AMENDED REPORT

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3110231-BLK1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:12					
EPA 8270D												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Carbazole	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Chlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	0.545	1.09	"	"	---	---	---	---	---	---	
2-Methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Nitrophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	

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AMENDED REPORT

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3110231-BLK1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:12					
4-Nitrophenol	ND	0.227	0.455	ug/L	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Phenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,3,5,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	1.00	2.00	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	

Surr:	*Nitrobenzene-d5 (Surr)*	*Recovery:*	*70 %*	*Limits:*	*35-120 %*	*Dilution: 1x*
	2-Fluorobiphenyl (Surr)		*52 %*		*30-120 %*	*"*
	Phenol-d6 (Surr)		*27 %*		*10-120 %*	*"*
	p-Terphenyl-d14 (Surr)		*82 %*		*50-125 %*	*"*
	2-Fluorophenol (Surr)		*42 %*		*15-120 %*	*"*
	2,4,6-Tribromophenol (Surr)		*64 %*		*35-125 %*	*"*

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (3110231-BS1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 20:47					
EPA 8270D												
Acenaphthene	3.22	0.0100	0.0200	ug/L	1	4.00	---	80	45-125%	---	---	
Acenaphthylene	3.32	0.0100	0.0200	"	"	"	---	83	50-125%	---	---	
Anthracene	3.93	0.0100	0.0200	"	"	"	---	98	55-125%	---	---	
Benz(a)anthracene	4.49	0.0100	0.0200	"	"	"	---	112	"	---	---	
Benzo(a)pyrene	4.33	0.0150	0.0300	"	"	"	---	108	"	---	---	
Benzo(b)fluoranthene	4.18	0.0150	0.0300	"	"	"	---	105	45-125%	---	---	
Benzo(k)fluoranthene	4.10	0.0150	0.0300	"	"	"	---	102	"	---	---	
Benzo(b+k)fluoranthene(s)	8.30	0.0300	0.0600	"	"	8.00	---	104	"	---	---	
Benzo(g,h,i)perylene	4.05	0.0100	0.0200	"	"	4.00	---	101	40-125%	---	---	
Chrysene	4.24	0.0100	0.0200	"	"	"	---	106	55-125%	---	---	

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Calbag Metals	Project:	Stormwater	
PO Box 10067	Project Number:	SCE 11/2/13	Reported:
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Batch 3110231 - EPA 3510C (Acid Extraction) Water

LCS (3110231-BS1) Prepared: 11/08/13 07:31 Analyzed: 11/08/13 20:47

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Dibenz(a,h)anthracene	4.29	0.0100	0.0200	ug/L	"	"	---	107	40-125%	---	---	
Fluoranthene	4.24	0.0100	0.0200	"	"	"	---	106	55-125%	---	---	
Fluorene	3.69	0.0100	0.0200	"	"	"	---	92	50-125%	---	---	
Indeno(1,2,3-cd)pyrene	4.29	0.0100	0.0200	"	"	"	---	107	45-125%	---	---	
1-Methylnaphthalene	3.01	0.0200	0.0400	"	"	"	---	75	45-120%	---	---	
2-Methylnaphthalene	2.98	0.0200	0.0400	"	"	"	---	74	"	---	---	
Naphthalene	2.70	0.0200	0.0400	"	"	"	---	68	40-125%	---	---	
Phenanthrene	3.84	0.0100	0.0200	"	"	"	---	96	50-125%	---	---	
Pyrene	4.21	0.0100	0.0200	"	"	"	---	105	"	---	---	
Carbazole	3.67	0.0150	0.0300	"	"	"	---	92	"	---	---	
Dibenzofuran	3.27	0.0100	0.0200	"	"	"	---	82	55-125%	---	---	
4-Chloro-3-methylphenol	3.86	0.250	0.500	"	"	"	---	97	45-120%	---	---	
2-Chlorophenol	3.34	0.250	0.500	"	"	"	---	83	35-120%	---	---	
2,4-Dichlorophenol	3.36	0.250	0.500	"	"	"	---	84	50-120%	---	---	
2,4-Dimethylphenol	3.24	0.250	0.500	"	"	"	---	81	30-120%	---	---	
2,4-Dinitrophenol	3.69	0.500	1.00	"	"	"	---	92	15-130%	---	---	
4,6-Dinitro-2-methylphenol	3.56	0.600	1.20	"	"	"	---	89	40-135%	---	---	
2-Methylphenol	2.92	0.250	0.500	"	"	"	---	73	40-120%	---	---	
3+4-Methylphenol(s)	2.92	0.250	0.500	"	"	"	---	73	30-120%	---	---	
2-Nitrophenol	3.34	0.250	0.500	"	"	"	---	84	40-120%	---	---	
4-Nitrophenol	1.44	0.250	0.500	"	"	"	---	36	10-140%	---	---	
Pentachlorophenol (PCP)	3.66	0.250	0.500	"	"	"	---	92	40-125%	---	---	
Phenol	1.47	0.500	1.00	"	"	"	---	37	10-120%	---	---	
2,3,4,6-Tetrachlorophenol	3.40	0.250	0.500	"	"	"	---	85	40-120%	---	---	
2,3,5,6-Tetrachlorophenol	3.41	0.250	0.500	"	"	"	---	85	"	---	---	
2,4,5-Trichlorophenol	3.39	0.250	0.500	"	"	"	---	85	50-120%	---	---	
2,4,6-Trichlorophenol	3.24	0.250	0.500	"	"	"	---	81	"	---	---	
Bis(2-ethylhexyl)phthalate	4.99	1.10	2.20	"	"	"	---	125	40-125%	---	---	
Butyl benzyl phthalate	5.30	1.50	3.00	"	"	"	---	133	45-125%	---	---	Q-29
Diethylphthalate	4.43	1.50	3.00	"	"	"	---	111	40-125%	---	---	
Dimethylphthalate	3.89	1.50	3.00	"	"	"	---	97	25-125%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Brian L Cone

Brian Cone, Industrial Services Manager

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
LCS (3110231-BS1)					Prepared: 11/08/13 07:31		Analyzed: 11/08/13 20:47					
Di-n-butylphthalate	5.09	1.50	3.00	ug/L	"	"	---	127	55-125%	---	---	Q-29
Di-n-octyl phthalate	5.23	1.50	3.00	"	"	"	---	131	35-125%	---	---	Q-29
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*95 %*	*Limits: 35-120 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*75 %*	*30-120 %*		*"*						
Phenol-d6 (Surr)			*36 %*	*10-120 %*		*"*						
p-Terphenyl-d14 (Surr)			*106 %*	*50-125 %*		*"*						
2-Fluorophenol (Surr)			*55 %*	*15-120 %*		*"*						
2,4,6-Tribromophenol (Surr)			*83 %*	*35-125 %*		*"*						
LCS Dup (3110231-BSD1)					Prepared: 11/08/13 07:31		Analyzed: 11/08/13 21:23					
EPA 8270D												
Acenaphthene	3.88	0.0100	0.0200	ug/L	1	4.00	---	97	45-125%	19	30%	
Acenaphthylene	3.87	0.0100	0.0200	"	"	"	---	97	50-125%	15	30%	
Anthracene	4.30	0.0100	0.0200	"	"	"	---	107	55-125%	9	30%	
Benz(a)anthracene	4.66	0.0100	0.0200	"	"	"	---	117	"	4	30%	
Benzo(a)pyrene	4.53	0.0150	0.0300	"	"	"	---	113	"	4	30%	
Benzo(b)fluoranthene	4.26	0.0150	0.0300	"	"	"	---	107	45-125%	2	30%	
Benzo(k)fluoranthene	4.23	0.0150	0.0300	"	"	"	---	106	"	3	30%	
Benzo(b+k)fluoranthene(s)	8.50	0.0300	0.0600	"	"	8.00	---	106	"	2	30%	
Benzo(g,h,i)perylene	4.20	0.0100	0.0200	"	"	4.00	---	105	40-125%	4	30%	
Chrysene	4.41	0.0100	0.0200	"	"	"	---	110	55-125%	4	30%	
Dibenz(a,h)anthracene	4.50	0.0100	0.0200	"	"	"	---	113	40-125%	5	30%	
Fluoranthene	4.36	0.0100	0.0200	"	"	"	---	109	55-125%	3	30%	
Fluorene	4.14	0.0100	0.0200	"	"	"	---	103	50-125%	11	30%	
Indeno(1,2,3-cd)pyrene	4.43	0.0100	0.0200	"	"	"	---	111	45-125%	3	30%	
1-Methylnaphthalene	3.78	0.0200	0.0400	"	"	"	---	94	45-120%	23	30%	
2-Methylnaphthalene	3.90	0.0200	0.0400	"	"	"	---	98	"	27	30%	
Naphthalene	3.49	0.0200	0.0400	"	"	"	---	87	40-125%	25	30%	
Phenanthrene	4.09	0.0100	0.0200	"	"	"	---	102	50-125%	6	30%	
Pyrene	4.40	0.0100	0.0200	"	"	"	---	110	"	4	30%	
Carbazole	3.92	0.0150	0.0300	"	"	"	---	98	"	7	30%	
Dibenzofuran	3.76	0.0100	0.0200	"	"	"	---	94	55-125%	14	30%	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110231 - EPA 3510C (Acid Extraction)							**Water**					
LCS Dup (3110231-BSD1)						Prepared: 11/08/13 07:31	Analyzed: 11/08/13 21:23					
4-Chloro-3-methylphenol	4.33	0.250	0.500	ug/L	"	"	---	108	45-120%	12	30%	
2-Chlorophenol	3.81	0.250	0.500	"	"	"	---	95	35-120%	13	30%	
2,4-Dichlorophenol	3.79	0.250	0.500	"	"	"	---	95	50-120%	12	30%	
2,4-Dimethylphenol	3.69	0.250	0.500	"	"	"	---	92	30-120%	13	30%	
2,4-Dinitrophenol	3.92	0.500	1.00	"	"	"	---	98	15-130%	6	30%	
4,6-Dinitro-2-methylphenol	3.83	0.600	1.20	"	"	"	---	96	40-135%	7	30%	
2-Methylphenol	3.26	0.250	0.500	"	"	"	---	82	40-120%	11	30%	
3+4-Methylphenol(s)	3.31	0.250	0.500	"	"	"	---	83	30-120%	12	30%	
2-Nitrophenol	3.86	0.250	0.500	"	"	"	---	96	40-120%	14	30%	
4-Nitrophenol	1.43	0.250	0.500	"	"	"	---	36	10-140%	0.4	30%	
Pentachlorophenol (PCP)	3.83	0.250	0.500	"	"	"	---	96	40-125%	4	30%	
Phenol	1.65	0.500	1.00	"	"	"	---	41	10-120%	11	30%	
2,3,4,6-Tetrachlorophenol	3.78	0.250	0.500	"	"	"	---	94	40-120%	11	30%	
2,3,5,6-Tetrachlorophenol	3.72	0.250	0.500	"	"	"	---	93	"	9	30%	
2,4,5-Trichlorophenol	3.91	0.250	0.500	"	"	"	---	98	50-120%	14	30%	
2,4,6-Trichlorophenol	3.71	0.250	0.500	"	"	"	---	93	"	14	30%	
Bis(2-ethylhexyl)phthalate	5.18	1.10	2.20	"	"	"	---	130	40-125%	4	30%	Q-29
Butyl benzyl phthalate	5.50	1.50	3.00	"	"	"	---	137	45-125%	4	30%	Q-29
Diethylphthalate	4.83	1.50	3.00	"	"	"	---	121	40-125%	9	30%	
Dimethylphthalate	4.32	1.50	3.00	"	"	"	---	108	25-125%	10	30%	
Di-n-butylphthalate	5.50	1.50	3.00	"	"	"	---	137	55-125%	8	30%	Q-29
Di-n-octyl phthalate	5.40	1.50	3.00	"	"	"	---	135	35-125%	3	30%	Q-29

Surr:	Recovery:	Limits:	Dilution:
Nitrobenzene-d5 (Surr)	*110 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*94 %*	*30-120 %*	*"*
Phenol-d6 (Surr)	*41 %*	*10-120 %*	*"*
p-Terphenyl-d14 (Surr)	*114 %*	*50-125 %*	*"*
2-Fluorophenol (Surr)	*63 %*	*15-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*93 %*	*35-125 %*	*"*

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AMENDED REPORT

12232 S.W. Garden Place
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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110355 - EPA 3015A							Water					
Blank (3110355-BLK1)						Prepared: 11/12/13 17:28	Analyzed: 11/13/13 13:13					
EPA 200.8												
Aluminum	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	
Antimony	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Arsenic	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.400	1.00	"	"	---	---	---	---	---	---	
Copper	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Manganese	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	
LCS (3110355-BS1)						Prepared: 11/12/13 17:28	Analyzed: 11/13/13 13:16					
EPA 200.8												
Aluminum	5700	25.0	50.0	ug/L	1	5560	---	103	85-115%	---	---	
Antimony	33.7	0.500	1.00	"	"	34.7	---	97	"	---	---	
Arsenic	54.7	0.500	1.00	"	"	55.6	---	98	"	---	---	
Cadmium	55.0	0.0400	0.200	"	"	"	---	99	"	---	---	
Chromium	56.5	0.400	1.00	"	"	"	---	102	"	---	---	
Copper	54.0	0.500	1.00	"	"	"	---	97	"	---	---	
Lead	57.5	0.100	0.200	"	"	"	---	103	"	---	---	
Manganese	57.4	0.500	1.00	"	"	"	---	103	"	---	---	
Mercury	1.11	0.0400	0.0800	"	"	1.11	---	100	"	---	---	
Nickel	54.2	0.500	1.00	"	"	55.6	---	98	"	---	---	
Silver	33.2	0.100	1.00	"	"	34.7	---	96	"	---	---	
Zinc	53.7	2.00	4.00	"	"	55.6	---	97	"	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110147 - Total Suspended Solids						**Water**						
Blank (3110147-BLK1)						Prepared: 11/06/13 11:30	Analyzed: 11/07/13 09:40					
SM 2540 D												
Total Suspended Solids	ND	---	5.00	mg/L	1	---	---	---	---	---	---	
Reference (3110147-SRM1)						Prepared: 11/06/13 11:30	Analyzed: 11/07/13 09:40					
SM 2540 D												
Total Suspended Solids	101	---		mg/L	1	100		101	90-110%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3110364 - Method Prep: Aq						**Water**						
Blank (3110364-BLK1)						Prepared: 11/13/13 08:40 Analyzed: 11/15/13 13:28						
SM 5310 B												
Total Organic Carbon	ND	---	1.00	mg/L	1	---	---	---	---	---	---	
LCS (3110364-BS1)						Prepared: 11/13/13 08:40 Analyzed: 11/15/13 13:52						
SM 5310 B												
Total Organic Carbon	10.2	---	1.00	mg/L	1	10.0	---	102	85-115%	---	---	
Duplicate (3110364-DUP1)						Prepared: 11/13/13 08:40 Analyzed: 11/15/13 16:58						
QC Source Sample: SCE110113G01E (A3K0133-01)												
SM 5310 B												
Total Organic Carbon	**16.8**	---	2.00	mg/L	2	---	16.5	---	---	2	20%	
Matrix Spike (3110364-MS1)						Prepared: 11/13/13 08:40 Analyzed: 11/15/13 18:08						
QC Source Sample: SCE110113G01E (A3K0133-01)												
SM 5310 B												
Total Organic Carbon	38.7	---	2.02	mg/L	2	20.0	16.5	111	75-125%	---	---	

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AMENDED REPORT

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/11/14 08:46

Notes and Definitions

Qualifiers:

C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
J	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-29	Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
R-04	Reporting levels elevated due to dilution necessary for analysis.
S-06	Surrogate recovery is outside of established control limits.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE 11/2/13	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/11/14 08:46

APEX LABS — **CHAIN OF CUSTODY** — Lab # A3K0133 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals Co. | Project Mgr: B. Cone | Project Name: SCE | Project #

Address: 2495 NW Nicolai Street, Portland, OR 97210 | Phone: 503 226 3441 | Fax: — | Email: scott.deridder@calbag.com

Sampled by: SA de Ridder.

Site Location: OR (circled) WA Other: ______

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	TOTAL/DISS TCLP metals	1200-COLS	1200-Z	phthalates	TSS	TOC
1	SCE110113G01E		110213	0241	W	10								✓	✓				✓			✓	✓	✓
2	and																							
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								

Normal Turn Around Time (TAT) = 7-10 Business Days YES (circled) NO

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ______

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS: CRITICAL!!! Refer to Calbag 2495 SAW v1 for special instructions and specific parameter list. (Table 2)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 11/4/13	Signature: [signature] Date: 11-4-13	Signature: Date:	Signature: Date:
Printed Name: Scott A. de Ridder Time: 1230	Printed Name: Adam Peterson Time: 1230	Printed Name: Time:	Printed Name: Time:
Company: Calbag.	Company: Apex	Company:	Company:

Specialty Analytical

11711 SE Capps Road, Ste B
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

December 09, 2013

Cal Noling
StormwateRx
122 SE 27th Avenue
Portland, OR 97214

TEL: (503) 545-7038
FAX
RE: Calbag Portland Performance Evaluation

Dear Cal Noling: Order No.: 1311016

Specialty Analytical received 2 sample(s) on 11/4/2013 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical

Date Reported: **09-Dec-13**

CLIENT:	StormwateRx	**Collection Date:**	11/2/2013 2:31:00 AM
Project:	Calbag Portland Performance Evaluation		
Lab ID:	1311016-001		
Client Sample ID:	SCE110113 G01 D	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP/MS METALS- TOTAL RECOVERABLE		**E200.8**				Analyst: **ZL**
Arsenic	2.88	0.100		µg/L	1	11/21/2013 4:23:00 AM
Cadmium	7.36	0.100		µg/L	1	11/22/2013 3:51:00 AM
Chromium	11.0	0.100		µg/L	1	11/21/2013 4:23:00 AM
Copper	380	5.00		µg/L	10	11/21/2013 5:15:00 AM
Lead	116	2.00		µg/L	20	11/23/2013 3:58:00 PM
Nickel	39.9	0.500		µg/L	1	11/21/2013 4:23:00 AM
Zinc	695	40.0		µg/L	20	11/23/2013 3:58:00 PM
TOTAL MERCURY-AQUEOUS		**E245.2**				Analyst: **VAS**
Mercury	0.000180	0.000100		mg/L	1	11/7/2013 11:24:00 AM
PAH'S BY GC/MS- LOW LEVEL		**SW8270D**				Analyst: **bda**
2-Methylnaphthalene	ND	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Acenaphthene	0.0432	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Acenaphthylene	0.309	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Anthracene	0.0427	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Benz(a)anthracene	0.0589	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Benzo(a)pyrene	0.0513	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Benzo(b)fluoranthene	0.126	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Benzo(g,h,i)perylene	0.0970	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Benzo(k)fluoranthene	0.0388	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Chrysene	0.154	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Dibenz(a,h)anthracene	ND	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Fluoranthene	0.201	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Fluorene	0.0354	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Indeno(1,2,3-cd)pyrene	0.0479	0.0128		µg/L	1	11/12/2013 10:49:00 AM
Naphthalene	0.364	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Phenanthrene	0.183	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Pyrene	0.222	0.0142		µg/L	1	11/12/2013 10:49:00 AM
Surr: 2-Fluorobiphenyl	66.6	18.6-106		%REC	1	11/12/2013 10:49:00 AM
Surr: Nitrobenzene-d5	80.5	17-130		%REC	1	11/12/2013 10:49:00 AM
Surr: p-Terphenyl-d14	76.8	39.6-131		%REC	1	11/12/2013 10:49:00 AM
PCB'S BY EPA 608		**E608**				Analyst: **ajr**
Aroclor 1016	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM
Aroclor 1221	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM
Aroclor 1232	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM
Aroclor 1242	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM
Aroclor 1248	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM

Specialty Analytical

Date Reported: **09-Dec-13**

CLIENT:	StormwateRx	**Collection Date:**	11/2/2013 2:31:00 AM
Project:	Calbag Portland Performance Evaluation		
Lab ID:	1311016-001		
Client Sample ID:	SCE110113 G01 D	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PCB'S BY EPA 608		**E608**				Analyst: **ajr**
Aroclor 1254	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM
Aroclor 1260	ND	0.0195		µg/L	1	11/12/2013 3:20:00 PM
Surr: Decachlorobiphenyl	38.3	22-135		%REC	1	11/12/2013 3:20:00 PM
HEM/SGT PER EPA 1664		**E1664**				Analyst: **JRC**
HEM (Total Hexane Extractable Material)	ND	4.80		mg/L	1	11/8/2013 9:30:00 AM
TOTAL SUSPENDED SOLIDS		**M2540 D**				Analyst: **JRC**
Total Suspended Solids	29.0	5.00		mg/L	1	11/6/2013 1:27:00 PM

Specialty Analytical

Date Reported: **09-Dec-13**

CLIENT:	StormwateRx	**Collection Date:**	11/2/2013 2:22:00 AM
Project:	Calbag Portland Performance Evaluation		
Lab ID:	1311016-002		
Client Sample ID:	SCE110113 G01 C	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP/MS METALS- TOTAL RECOVERABLE		**E200.8**				Analyst: **ZL**
Arsenic	2.91	0.100		µg/L	1	11/21/2013 4:31:00 AM
Cadmium	6.06	0.100		µg/L	1	11/22/2013 3:58:00 AM
Chromium	11.9	0.100		µg/L	1	11/21/2013 4:31:00 AM
Copper	324	5.00		µg/L	10	11/21/2013 5:23:00 AM
Lead	96.6	2.00		µg/L	20	11/23/2013 4:05:00 PM
Nickel	44.4	0.500		µg/L	1	11/21/2013 4:31:00 AM
Zinc	549	40.0		µg/L	20	11/23/2013 4:05:00 PM
TOTAL MERCURY-AQUEOUS		**E245.2**				Analyst: **VAS**
Mercury	0.000140	0.000100		mg/L	1	11/7/2013 11:28:00 AM
TOTAL SUSPENDED SOLIDS		**M2540 D**				Analyst: **JRC**
Total Suspended Solids	28.0	5.00		mg/L	1	11/6/2013 1:28:00 PM

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **1664_SPE**

Sample ID: **MB-R12312**	SampType: **MBLK**	TestCode: **1664_SPE**	Units: **mg/L**	Prep Date:	RunNo: **12312**
Client ID: **PBW**	Batch ID: **R12312**	TestNo: **E1664**		Analysis Date: **11/8/2013**	SeqNo: **157295**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
HEM (Total Hexane Extractable Materia	ND	5.00									
SGT (Non-Polar Extractable Material)	ND	5.00									

Sample ID: **LCS-R12312**	SampType: **LCS**	TestCode: **1664_SPE**	Units: **mg/L**	Prep Date:	RunNo: **12312**
Client ID: **LCSW**	Batch ID: **R12312**	TestNo: **E1664**		Analysis Date: **11/8/2013**	SeqNo: **157296**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
HEM (Total Hexane Extractable Materia	37.5	5.00	40.00	0	93.8	78	114				
SGT (Non-Polar Extractable Material)	17.8	5.00	20.00	0	89.0	64	132				

Sample ID: **LCSD-R12312**	SampType: **LCSD**	TestCode: **1664_SPE**	Units: **mg/L**	Prep Date:	RunNo: **12312**
Client ID: **LCSS02**	Batch ID: **R12312**	TestNo: **E1664**		Analysis Date: **11/8/2013**	SeqNo: **157297**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
HEM (Total Hexane Extractable Materia	38.1	5.00	40.00	0	95.2	78	114	37.50	1.59	20	
SGT (Non-Polar Extractable Material)	18.1	5.00	20.00	0	90.5	64	132	17.80	1.67	20	

Qualifiers:						
	B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation

TestCode: 200.8

Sample ID: **ICV** SampType: **ICV** TestCode: **200.8** Units: **µg/L** Prep Date: RunNo: **12554**

Client ID: **ICV** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/20/2013** SeqNo: **161267**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.2	0.100	50.00	0	100	90	110				
Cadmium	51.4	0.100	50.00	0	103	90	110				
Chromium	50.9	0.100	50.00	0	102	90	110				
Copper	51.9	0.500	50.00	0	104	90	110				
Lead	53.9	0.100	50.00	0	108	90	110				
Nickel	51.2	0.500	50.00	0	102	90	110				
Zinc	51.6	2.00	50.00	0	103	90	110				

Sample ID: **MBLK-6233** SampType: **MBLK** TestCode: **200.8** Units: **µg/L** Prep Date: RunNo: **12554**

Client ID: **PBW** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/21/2013** SeqNo: **161270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Cadmium	ND	0.100									
Nickel	ND	0.500									

Sample ID: **LCS-6233** SampType: **LCS** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **LCSW** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/21/2013** SeqNo: **161271**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.0	0.100	50.00	0	104	85	115				
Cadmium	59.5	0.100	50.00	0	119	85	115				SCN

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **200.8**

Sample ID: **1311080-002CDUP** SampType: **DUP** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/21/2013** SeqNo: **161273**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100						0	200	20	R
Cadmium	ND	0.100						0.1383	200	20	R
Nickel	0.834	0.500						0.5455	41.8	20	R
Zinc	38.8	2.00						33.88	13.4	20	

Sample ID: **1311080-002CMS** SampType: **MS** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/21/2013** SeqNo: **161274**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.8	0.100	50.00	0.06261	101	70	130				
Cadmium	56.3	0.100	50.00	0.1383	112	70	130				
Nickel	55.0	0.500	50.00	0.5455	109	70	130				
Zinc	85.2	2.00	50.00	33.88	103	70	130				

Sample ID: **1311080-002CMSD** SampType: **MSD** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/21/2013** SeqNo: **161275**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	51.3	0.100	50.00	0.06261	102	70	130	50.81	0.979	20	
Cadmium	55.2	0.100	50.00	0.1383	110	70	130	56.28	2.01	20	
Nickel	54.3	0.500	50.00	0.5455	108	70	130	55.02	1.32	20	
Zinc	95.5	2.00	50.00	33.88	123	70	130	85.22	11.4	20	

Qualifiers: B Analyte detected in the associated Method Blank; H Holding times for preparation or analysis exceeded; ND Not Detected at the Reporting Limit; O RSD is greater than RSDlimit; R RPD outside accepted recovery limits; S Spike Recovery outside accepted reco

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **200.8**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **CCV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/21/2013**	SeqNo: **161291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.3	0.100	50.00	0	101	90	110				
Chromium	53.4	0.100	50.00	0	107	90	110				
Copper	54.2	0.500	50.00	0	108	90	110				
Nickel	52.8	0.500	50.00	0	106	90	110				
Zinc	52.3	2.00	50.00	0	105	90	110				

Sample ID: **ICV**	SampType: **ICV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **ICV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/21/2013**	SeqNo: **161307**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	47.1	0.100	50.00	0	94.1	90	110				
Chromium	50.7	0.100	50.00	0	101	90	110				
Copper	48.7	0.500	50.00	0	97.5	90	110				
Lead	45.1	0.100	50.00	0	90.2	90	110				

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **CCV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	49.6	0.100	50.00	0	99.1	90	110				
Chromium	52.9	0.100	50.00	0	106	90	110				
Copper	50.5	0.500	50.00	0	101	90	110				
Lead	47.7	0.100	50.00	0	95.5	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco'

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **200.8**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **CCV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **MBLK-6233**	SampType: **MBLK**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **PBW**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161310**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.100									

Sample ID: **LCS-6233**	SampType: **LCS**	TestCode: **200.8**	Units: **µg/L**	Prep Date: **11/12/2013**	RunNo: **12554**
Client ID: **LCSW**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161311**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	56.7	0.100	50.00	0	113	85	115				
Lead	55.2	0.100	50.00	0	110	85	115				

Sample ID: **1311080-002CDUP**	SampType: **DUP**	TestCode: **200.8**	Units: **µg/L**	Prep Date: **11/12/2013**	RunNo: **12554**
Client ID: **ZZZZZZ**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.960	0.100						1.503	44.1	20	R
Copper	9.29	0.500						3.493	90.7	20	R
Lead	1.41	0.100						1.304	7.74	20	

Qualifiers:						
	B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** 200.8

Sample ID: **1311080-002CMS**	SampType: **MS**	TestCode: **200.8**	Units: **µg/L**	Prep Date: **11/12/2013**	RunNo: **12554**
Client ID: **ZZZZZZ**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161314**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	57.1	0.100	50.00	1.503	111	70	130				
Copper	59.0	0.500	50.00	3.493	111	70	130				
Lead	55.0	0.100	50.00	1.304	107	70	130				

Sample ID: **1311080-002CMSD**	SampType: **MSD**	TestCode: **200.8**	Units: **µg/L**	Prep Date: **11/12/2013**	RunNo: **12554**
Client ID: **ZZZZZZ**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	57.8	0.100	50.00	1.503	113	70	130	57.07	1.24	20	
Copper	74.8	0.500	50.00	3.493	143	70	130	58.99	23.6	20	SR
Lead	54.6	0.100	50.00	1.304	107	70	130	55.02	0.748	20	

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **CCV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/22/2013**	SeqNo: **161331**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	51.2	0.100	50.00	0	102	90	110				
Chromium	54.5	0.100	50.00	0	109	90	110				
Copper	51.9	0.500	50.00	0	104	90	110				
Lead	49.8	0.100	50.00	0	99.7	90	110				

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **200.8**

Sample ID: **ICV**	SampType: **ICV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **ICV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/23/2013**	SeqNo: **161650**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	48.2	0.100	50.00	0	96.4	90	110				
Nickel	51.1	0.500	50.00	0	102	90	110				
Zinc	51.5	2.00	50.00	0	103	90	110				

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **CCV**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/23/2013**	SeqNo: **161651**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	48.2	0.100	50.00	0	96.4	90	110				
Nickel	47.5	0.500	50.00	0	95.0	90	110				
Zinc	51.0	2.00	50.00	0	102	90	110				

Sample ID: **MBLK-6233**	SampType: **MBLK**	TestCode: **200.8**	Units: **µg/L**	Prep Date:	RunNo: **12554**
Client ID: **PBW**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/23/2013**	SeqNo: **161652**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	ND	2.00									

Sample ID: **LCS-6233**	SampType: **LCS**	TestCode: **200.8**	Units: **µg/L**	Prep Date: **11/12/2013**	RunNo: **12554**
Client ID: **LCSW**	Batch ID: **6233**	TestNo: **E200.8**	**E200.8**	Analysis Date: **11/23/2013**	SeqNo: **161653**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx
Project: Calbag Portland Performance Evaluation **TestCode:** **200.8**

Sample ID: **LCS-6233** SampType: **LCS** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**
Client ID: **LCSW** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/23/2013** SeqNo: **161653**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	49.8	2.00	50.00	0	99.6	85	115				

Sample ID: **1311080-002CDUP** SampType: **DUP** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**
Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **11/23/2013** SeqNo: **161655**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	31.1	2.00						33.88	8.62	20	

Sample ID: **ICV** SampType: **ICV** TestCode: **200.8** Units: **µg/L** Prep Date: RunNo: **12554**
Client ID: **ICV** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164695**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	54.0	0.100	50.00	0	108	90	110				
Copper	54.0	0.500	50.00	0	108	90	110				
Nickel	54.2	0.500	50.00	0	108	90	110				

Sample ID: **CCV** SampType: **CCV** TestCode: **200.8** Units: **µg/L** Prep Date: RunNo: **12554**
Client ID: **CCV** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164697**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	54.2	0.500	50.00	0	108	90	110				
Nickel	50.4	0.500	50.00	0	101	90	110				

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation

TestCode: **200.8**

Sample ID: **CCV** SampType: **CCV** TestCode: **200.8** Units: **µg/L** Prep Date: RunNo: **12554**

Client ID: **CCV** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164697**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **MBLK-6233** SampType: **MBLK** TestCode: **200.8** Units: **µg/L** Prep Date: RunNo: **12554**

Client ID: **PBW** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164698**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	0.100									
Copper	ND	0.500									
Nickel	ND	0.500									

Sample ID: **LCS-6233** SampType: **LCS** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **LCSW** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164699**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	49.2	0.500	50.00	0	98.4	85	115				
Nickel	43.1	0.500	50.00	0	86.2	85	115				

Sample ID: **1311080-002CDUP** SampType: **DUP** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164702**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nickel	0.595	0.500						0.2735	74.1	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation

TestCode: **200.8**

Sample ID: **1311080-002CMS** SampType: **MS** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164703**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	51.8	0.500	50.00	1.580	100	70	130				
Nickel	45.8	0.500	50.00	0.2735	91.0	70	130				

Sample ID: **1311080-002CMSD** SampType: **MSD** TestCode: **200.8** Units: **µg/L** Prep Date: **11/12/2013** RunNo: **12554**

Client ID: **ZZZZZZ** Batch ID: **6233** TestNo: **E200.8** **E200.8** Analysis Date: **12/4/2013** SeqNo: **164704**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	51.1	0.500	50.00	1.580	99.1	70	130	51.80	1.30	20	
Nickel	44.3	0.500	50.00	0.2735	88.0	70	130	45.75	3.29	20	

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** 608PCB_W

Sample ID: **1016/1260 CCV 1**	SampType: **CCV**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date:	RunNo: **12359**
Client ID: **CCV**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158183**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	2.18	0.0200	2.000	0	109	85	115				

Sample ID: **MBLK-6214**	SampType: **MBLK**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date:	RunNo: **12359**
Client ID: **PBW**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158184**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.0200									
Aroclor 1221	ND	0.0200									
Aroclor 1232	ND	0.0200									
Aroclor 1242	ND	0.0200									
Aroclor 1248	ND	0.0200									
Aroclor 1254	ND	0.0200									
Aroclor 1260	ND	0.0200									
Surr: Decachlorobiphenyl	103		200.0		51.4	22	135				

Sample ID: **LCS-6214**	SampType: **LCS**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date: **11/6/2013**	RunNo: **12359**
Client ID: **LCSW**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158185**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	1.34	0.0200	2.000	0	67.0	50	114				

Qualifiers:						
	B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation

TestCode: 608PCB_W

Sample ID: **LCSD-6214**	SampType: **LCSD**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date: **11/6/2013**	RunNo: **12359**
Client ID: **LCSS02**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158186**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	1.30	0.0200	2.000	0	64.9	50	114	1.340	3.18	20	

Sample ID: **1311007-001DMS**	SampType: **MS**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date: **11/6/2013**	RunNo: **12359**
Client ID: **ZZZZZZ**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158188**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	1.02	0.0190	1.903	0	53.8	50	114				

Sample ID: **1311013-001BMS**	SampType: **MS**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date: **11/6/2013**	RunNo: **12359**
Client ID: **ZZZZZZ**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158190**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	1.59	0.0190	1.903	0	83.7	50	114				

Sample ID: **1311018-001BMS**	SampType: **MS**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date: **11/6/2013**	RunNo: **12359**
Client ID: **ZZZZZZ**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	1.29	0.0205	2.053	0	63.0	50	114				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **608PCB_W**

Sample ID: **1016/1260 CCV 1**	SampType: **CCV**	TestCode: **608PCB_W**	Units: **µg/L**	Prep Date:	RunNo: **12359**
Client ID: **CCV**	Batch ID: **6214**	TestNo: **E608**	**E608**	Analysis Date: **11/12/2013**	SeqNo: **158194**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	2.15	0.0200	2.000	0	108	85	115				

Qualifiers:	B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation

TestCode: **Hg_WW**

Sample ID: **MB-R12279** SampType: **MBLK** TestCode: **Hg_WW** Units: **mg/L** Prep Date: RunNo: **12279**

Client ID: **PBW** Batch ID: **6210** TestNo: **E245.2** **E245.1** Analysis Date: **11/7/2013** SeqNo: **156951**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.000100									

Sample ID: **LCS-R12279** SampType: **LCS** TestCode: **Hg_WW** Units: **mg/L** Prep Date: RunNo: **12279**

Client ID: **LCSW** Batch ID: **6210** TestNo: **E245.2** **E245.1** Analysis Date: **11/7/2013** SeqNo: **156952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00364	0.000100	0.004000	0	91.0	80	120				

Sample ID: **A1310210-001ADUP** SampType: **DUP** TestCode: **HG_WW** Units: **mg/L** Prep Date: RunNo: **12279**

Client ID: **ZZZZZZ** Batch ID: **6210** TestNo: **E245.2** **E245.1** Analysis Date: **11/7/2013** SeqNo: **156963**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.000100						0	0	20	

Sample ID: **A1310210-001AMS** SampType: **MS** TestCode: **HG_WW** Units: **mg/L** Prep Date: RunNo: **12279**

Client ID: **ZZZZZZ** Batch ID: **6210** TestNo: **E245.2** **E245.1** Analysis Date: **11/7/2013** SeqNo: **156964**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00402	0.000100	0.004000	0	101	75	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **Hg_WW**

Sample ID: **A1310210-001AMSD**	SampType: **MSD**	TestCode: **HG_WW**	Units: **mg/L**	Prep Date:	RunNo: **12279**
Client ID: **ZZZZZZ**	Batch ID: **6210**	TestNo: **E245.2**	**E245.1**	Analysis Date: **11/7/2013**	SeqNo: **156965**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00401	0.000100	0.004000	0	100	75	125	0.004020	0.249	20	

Sample ID: **CCV**	SampType: **CCV**	TestCode: **HG_WW**	Units: **mg/L**	Prep Date:	RunNo: **12279**
Client ID: **CCV**	Batch ID: **6210**	TestNo: **E245.2**	**E245.1**	Analysis Date: **11/7/2013**	SeqNo: **156966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00405	0.000100	0.004000	0	101	90	110				

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **PAHRBDM_W**

Sample ID: **LCS-6222** SampType: **LCS** TestCode: **PAHRBDM_** Units: **µg/L** Prep Date: **11/7/2013** RunNo: **12346**

Client ID: **LCSW** Batch ID: **6222** TestNo: **SW8270D** **SW 3510C** Analysis Date: **11/12/2013** SeqNo: **157902**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	3.75	0.0142	5.000	0	74.9	26.8	87.5				
Acenaphthylene	4.15	0.0142	5.000	0	83.0	29	89.1				
Anthracene	3.93	0.0142	5.000	0	78.5	42	97.4				
Benz(a)anthracene	4.24	0.0128	5.000	0	84.8	34.2	95.8				
Benzo(a)pyrene	4.65	0.0128	5.000	0	93.0	23.4	103				
Benzo(b)fluoranthene	4.55	0.0128	5.000	0	90.9	36.6	99.5				
Benzo(g,h,i)perylene	4.64	0.0128	5.000	0	92.9	10.3	109				
Benzo(k)fluoranthene	4.36	0.0128	5.000	0	87.1	39.7	93.4				
Chrysene	3.96	0.0128	5.000	0	79.3	36.8	99.8				
Dibenz(a,h)anthracene	4.81	0.0128	5.000	0	96.2	5.05	89				SO
Fluoranthene	4.48	0.0142	5.000	0	89.6	42.4	95.9				
Fluorene	4.19	0.0142	5.000	0	83.7	37.4	88.4				
Indeno(1,2,3-cd)pyrene	4.73	0.0128	5.000	0	94.5	10.5	98.4				
Naphthalene	2.74	0.0142	5.000	0	54.7	16.8	96.9				
Phenanthrene	4.13	0.0142	5.000	0	82.6	35.8	92.9				
Pyrene	4.47	0.0142	5.000	0	89.5	39.4	97.5				

Sample ID: **LCSD-6222** SampType: **LCSD** TestCode: **PAHRBDM_** Units: **µg/L** Prep Date: **11/7/2013** RunNo: **12346**

Client ID: **LCSS02** Batch ID: **6222** TestNo: **SW8270D** **SW 3510C** Analysis Date: **11/12/2013** SeqNo: **157903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	3.63	0.0142	5.000	0	72.7	26.8	87.5	3.746	3.09	20	
Acenaphthylene	4.07	0.0142	5.000	0	81.4	29	89.1	4.152	2.00	20	
Anthracene	3.82	0.0142	5.000	0	76.5	42	97.4	3.927	2.65	20	

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **PAHRBDM_W**

Sample ID: **LCSD-6222**	SampType: **LCSD**	TestCode: **PAHRBDM_**	Units: **µg/L**	Prep Date: **11/7/2013**	RunNo: **12346**
Client ID: **LCSS02**	Batch ID: **6222**	TestNo: **SW8270D**	**SW 3510C**	Analysis Date: **11/12/2013**	SeqNo: **157903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	4.25	0.0128	5.000	0	85.1	34.2	95.8	4.241	0.285	20	
Benzo(a)pyrene	4.60	0.0128	5.000	0	92.0	23.4	103	4.649	1.02	20	
Benzo(b)fluoranthene	4.51	0.0128	5.000	0	90.2	36.6	99.5	4.546	0.805	20	
Benzo(g,h,i)perylene	4.60	0.0128	5.000	0	92.1	10.3	109	4.644	0.850	20	
Benzo(k)fluoranthene	4.38	0.0128	5.000	0	87.7	39.7	93.4	4.356	0.639	20	
Chrysene	3.96	0.0128	5.000	0	79.3	36.8	99.8	3.963	0.0371	20	
Dibenz(a,h)anthracene	4.74	0.0128	5.000	0	94.8	5.05	89	4.808	1.45	20	SO
Fluoranthene	4.46	0.0142	5.000	0	89.3	42.4	95.9	4.481	0.409	20	
Fluorene	4.01	0.0142	5.000	0	80.3	37.4	88.4	4.186	4.17	20	
Indeno(1,2,3-cd)pyrene	4.69	0.0128	5.000	0	93.8	10.5	98.4	4.727	0.755	20	
Naphthalene	3.16	0.0142	5.000	0	63.3	16.8	96.9	2.735	14.5	20	
Phenanthrene	3.95	0.0142	5.000	0	78.9	35.8	92.9	4.129	4.52	20	
Pyrene	4.44	0.0142	5.000	0	88.9	39.4	97.5	4.474	0.683	20	

Sample ID: **MB-6222**	SampType: **MBLK**	TestCode: **PAHRBDM_**	Units: **µg/L**	Prep Date: **11/7/2013**	RunNo: **12346**
Client ID: **PBW**	Batch ID: **6222**	TestNo: **SW8270D**	**SW 3510C**	Analysis Date: **11/12/2013**	SeqNo: **157904**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.0142									
Acenaphthylene	ND	0.0142									
Anthracene	ND	0.0142									
Benz(a)anthracene	ND	0.0128									
Benzo(a)pyrene	ND	0.0128									
Benzo(b)fluoranthene	ND	0.0128									

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation

TestCode: **PAHRBDM_W**

Sample ID: **MB-6222** | SampType: **MBLK** | TestCode: **PAHRBDM_** | Units: **µg/L** | Prep Date: **11/7/2013** | RunNo: **12346**

Client ID: **PBW** | Batch ID: **6222** | TestNo: **SW8270D** **SW 3510C** | Analysis Date: **11/12/2013** | SeqNo: **157904**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(g,h,i)perylene	ND	0.0128									
Benzo(k)fluoranthene	ND	0.0128									
Chrysene	ND	0.0128									
Dibenz(a,h)anthracene	ND	0.0128									
Fluoranthene	ND	0.0142									
Fluorene	ND	0.0142									
Indeno(1,2,3-cd)pyrene	ND	0.0128									
Naphthalene	ND	0.0142									
Phenanthrene	ND	0.0142									
Pyrene	ND	0.0142									
Surr: 2-Fluorobiphenyl	0.0783		0.1000		78.3	18.6	106				
Surr: Nitrobenzene-d5	0.0899		0.1000		89.9	17	130				
Surr: p-Terphenyl-d14	0.0961		0.1000		96.1	39.6	131				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1311016**

09-Dec-13

Specialty Analytical

Client: StormwateRx

Project: Calbag Portland Performance Evaluation **TestCode:** **TSS_WW**

Sample ID: **MB-R12270** SampType: **MBLK** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **12270**
Client ID: **PBW** Batch ID: **R12270** TestNo: **M2540 D** Analysis Date: **11/6/2013** SeqNo: **156789**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	5.00									

Sample ID: **LCS-R12270** SampType: **LCS** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **12270**
Client ID: **LCSW** Batch ID: **R12270** TestNo: **M2540 D** Analysis Date: **11/6/2013** SeqNo: **156790**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	95.0	5.00	100.0	0	95.0	80	105				

Sample ID: **1311008-001BDUP** SampType: **DUP** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **12270**
Client ID: **ZZZZZZ** Batch ID: **R12270** TestNo: **M2540 D** Analysis Date: **11/6/2013** SeqNo: **156793**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	5.00						0	200	20	

Sample ID: **1311020-001BDUP** SampType: **DUP** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **12270**
Client ID: **ZZZZZZ** Batch ID: **R12270** TestNo: **M2540 D** Analysis Date: **11/6/2013** SeqNo: **156807**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	5.00						0	0	20	

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

KEY TO FLAGS

Rev. May 12, 2010

A This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards

A1 This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.

A2 This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.

A3 The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.

A4 The product appears to be aged or degraded diesel.

B The blank exhibited a positive result great than the reporting limit for this compound.

CN See Case Narrative.

D Result is based from a dilution.

E Result exceeds the calibration range for this compound. The result should be considered as estimate.

F The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.

G Result may be biased high due to biogenic interferences. Clean up is recommended.

H Sample was analyzed outside recommended holding time.

HT At clients request, samples was analyzed outside of recommended holding time.

J The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.

K Diesel result is biased high due to amount of Oil contained in the sample.

L Diesel result is biased high due to amount of Gasoline contained in the sample.

M Oil result is biased high due to amount of Diesel contained in the sample.

MC Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI Result is outside control limits due to matrix interference.

MSA Value determined by Method of Standard Addition.

O Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.

Q Detection levels elevated due to sample matrix.

R RPD control limits were exceeded.

RF Duplicate failed due to result being at or near the method-reporting limit.

RP Matrix spike values exceed established QC limits; post digestion spike is in control.

S Recovery is outside control limits.

SC Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.

* The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

APEX LABS

CHAIN OF CUSTODY

Lab # 1311016 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: StormwaterRx | Project Mgr: | Project Name: Calbag Portland Performance Evaluation | Project #:

Address: 122 SE 27th Ave., Portland, OR 97214 | Phone: 800 680-3543 | Fax: | Email: calu@stormwaterx.com

Sampled by: SA de Ridder

Site Location: OR WA

Other: ______

ANALYSIS REQUEST

#	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn, TOTAL, DISS TCLP	1200-COLS	1200-Z	TSS	O&G	PCB's	PAH's			
1	SCE110113G01D		110213	0231	W	5													✓			✓	✓	✓	✓			
2	SCE110113G01C		110213	0222	W	2													✓			✓						
3	end																											
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ______

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
- refer to attached sheet for specific PAH's and PCBs. (Table 2, Calbag 2495 Nicolai SAW v1)
- contact StormwaterRx if any questions.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 11/4/13	Signature: [signature] SA Date: 4Nov13	Signature: [signature] Date: 4Nov13	Signature: Nikki Bopper Date: 11/4/13
Printed Name: SA de Ridder Time: 0945	Printed Name: Time:	Printed Name: Time: 1150	Printed Name: Nikki B Time: 1150
Company:	Company:	Company:	Company: Specialty

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AMENDED REPORT

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Wednesday, January 22, 2014

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater / SCE

Enclosed are the results of analyses for work order A3L0541, which was received by the laboratory on 12/20/2013 at 6:10:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SCE122013G01E	A3L0541-01	Water	12/20/13 16:14	12/20/13 18:10

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AMENDED REPORT

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/22/14 10:49

ANALYTICAL CASE NARRATIVE

Work Order: A3L0541

Elevated Method Reporting Limits, 8270D analysis.

Sample SCE122013601E (A3L0541-01) was analyzed for method 8270D. Due to petroleum hydrocarbons present in the sample, a 10x dilution was required for analysis. No post extraction cleanup procedures (GPC or silica gel) were performed due to the ineffectiveness of these cleanup procedures to separate petroleum hydrocarbons from the 8270D target analytes.

Mark Zehr
Organics Manager
1/22/2014

12232 S.W. Garden Place
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503-718-0333 Fax

Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE122013G01E (A3L0541-01)			**Matrix: Water**		**Batch: 4010032**			**C-07**
Aroclor 1016	ND	0.00971	0.0194	ug/L	1	01/06/14 11:38	EPA 608	
Aroclor 1221	ND	0.00971	0.0194	"	"	"	"	
Aroclor 1232	ND	0.00971	0.0194	"	"	"	"	
Aroclor 1242	**0.0163**	0.00971	0.0194	"	"	"	"	J
Aroclor 1248	ND	0.00971	0.0194	"	"	"	"	
Aroclor 1254	**0.0186**	0.00971	0.0194	"	"	"	"	J
Aroclor 1260	**0.0104**	0.00971	0.0194	"	"	"	"	J
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 70 %*	*Limits: 40-135 %*	"	"	"	

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Brian Cone, Industrial Services Manager

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AMENDED REPORT

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE122013G01E (A3L0541-01RE1)			**Matrix: Water**		**Batch: 3120619**			**R-04**
Acenaphthene	ND	0.0980	0.196	ug/L	10	12/30/13 18:43	EPA 8270D P/P/P	
Acenaphthylene	ND	0.0980	0.196	"	"	"	"	
Anthracene	ND	0.0980	0.196	"	"	"	"	
Benz(a)anthracene	ND	0.0980	0.196	"	"	"	"	
Benzo(a)pyrene	ND	0.147	0.294	"	"	"	"	
Benzo(b)fluoranthene	ND	0.147	0.294	"	"	"	"	
Benzo(k)fluoranthene	ND	0.147	0.294	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.0980	0.196	"	"	"	"	
Chrysene	ND	0.0980	0.196	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0980	0.196	"	"	"	"	
Fluoranthene	ND	0.0980	0.196	"	"	"	"	
Fluorene	ND	0.0980	0.196	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0980	0.196	"	"	"	"	
2-Methylnaphthalene	ND	0.196	0.392	"	"	"	"	
Naphthalene	ND	0.196	0.392	"	"	"	"	
Phenanthrene	ND	0.0980	0.196	"	"	"	"	
Pyrene	ND	0.0980	0.196	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.8	21.6	"	"	"	"	
Butyl benzyl phthalate	ND	14.7	29.4	"	"	"	"	
Diethylphthalate	ND	14.7	29.4	"	"	"	"	
Dimethylphthalate	ND	14.7	29.4	"	"	"	"	
Di-n-butylphthalate	ND	14.7	29.4	"	"	"	"	
Di-n-octyl phthalate	ND	14.7	29.4	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 78 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*87 %*	*Limits: 30-120 %*	"	"	"	
Phenol-d6 (Surr)			*28 %*	*Limits: 10-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*75 %*	*Limits: 50-125 %*	"	"	"	
2-Fluorophenol (Surr)			*38 %*	*Limits: 15-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*125 %*	*Limits: 35-125 %*	"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

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AMENDED REPORT

12232 S.W. Garden Place
Tigard, OR 97223
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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE122013G01E (A3L0541-01)			**Matrix: Water**					
Batch: 4010102								
Aluminum	**270**	25.0	50.0	ug/L	1	01/07/14 17:13	EPA 200.8	
Antimony	**1.93**	0.500	1.00	"	"	01/07/14 14:43	"	
Arsenic	**0.611**	0.500	1.00	"	"	"	"	J
Cadmium	**0.522**	0.0400	0.200	"	"	"	"	
Chromium	**2.04**	0.400	1.00	"	"	"	"	
Copper	**70.2**	0.500	2.00	"	"	"	"	
Lead	**33.9**	0.100	0.200	"	"	"	"	
Manganese	**10.1**	0.500	1.00	"	"	"	"	
Mercury	**0.0619**	0.0400	0.0800	"	"	"	"	J
Nickel	**8.52**	0.500	1.00	"	"	"	"	
Silver	ND	0.100	1.00	"	"	"	"	
Zinc	**42.3**	2.00	4.00	"	"	"	"	

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AMENDED REPORT

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SCE122013G01E (A3L0541-01)			**Matrix: Water**					
Batch: 3120563								
Total Organic Carbon	**11.0**	---	1.00	mg/L	1	01/03/14 22:28	SM 5310 B	
Batch: 3120607								
Total Suspended Solids	ND	---	5.00	"	"	12/26/13 13:08	SM 2540 D	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010032 - EPA 3510C (Neutral pH)							**Water**					
Blank (4010032-BLK1)						Prepared: 01/03/14 07:32	Analyzed: 01/06/14 10:44					**C-07**
EPA 608												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 82 %*	*Limits: 40-135 %*		*Dilution: 1x*						
LCS (4010032-BS1)						Prepared: 01/03/14 07:32	Analyzed: 01/06/14 11:02					**C-07**
EPA 608												
Aroclor 1016	1.15	0.0100	0.0200	ug/L	1	1.25	---	92	40-140%	---	---	
Aroclor 1260	0.931	0.0100	0.0200	"	"	"	---	75	"	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 71 %*	*Limits: 40-135 %*		*Dilution: 1x*						
LCS Dup (4010032-BSD1)						Prepared: 01/03/14 07:32	Analyzed: 01/06/14 11:20					**C-07, Q-19**
EPA 608												
Aroclor 1016	1.17	0.0100	0.0200	ug/L	1	1.25	---	93	40-140%	2	30%	
Aroclor 1260	0.957	0.0100	0.0200	"	"	"	---	77	"	3	30%	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 72 %*	*Limits: 40-135 %*		*Dilution: 1x*						

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AMENDED REPORT

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
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Calbag Metals
PO Box 10067
Portland, OR 97296

Project: **Stormwater**
Project Number: SCE
Project Manager: Scott A. de Ridder

Reported:
01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3120619 - EPA 3510C (Acid Extraction)							**Water**					
Blank (3120619-BLK2)						Prepared: 12/26/13 06:58	Analyzed: 12/27/13 14:54					
EPA 8270D P/P/P												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Carbazole	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Chlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	0.545	1.09	"	"	---	---	---	---	---	---	
2-Methylphenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2-Nitrophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	

Apex Laboratories

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Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

AMENDED REPORT

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3120619 - EPA 3510C (Acid Extraction)						**Water**						
Blank (3120619-BLK2)						Prepared: 12/26/13 06:58	Analyzed: 12/27/13 14:54					
4-Nitrophenol	ND	0.227	0.455	ug/L	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Phenol	ND	0.455	0.909	"	"	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,3,5,6-Tetrachlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	0.227	0.455	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	1.00	2.00	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	1.36	2.73	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*65 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*64 %*		*30-120 %*		*"*					
Phenol-d6 (Surr)			*23 %*		*10-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*87 %*		*50-125 %*		*"*					
2-Fluorophenol (Surr)			*34 %*		*15-120 %*		*"*					
2,4,6-Tribromophenol (Surr)			*85 %*		*35-125 %*		*"*					
LCS (3120619-BS2)						Prepared: 12/26/13 06:58	Analyzed: 12/27/13 15:30					
EPA 8270D P/P/P												
Acenaphthene	3.20	0.0100	0.0200	ug/L	1	4.00	---	80	45-125%	---	---	
Acenaphthylene	3.26	0.0100	0.0200	"	"	"	---	81	50-125%	---	---	
Anthracene	3.44	0.0100	0.0200	"	"	"	---	86	55-125%	---	---	
Benz(a)anthracene	3.75	0.0100	0.0200	"	"	"	---	94	"	---	---	
Benzo(a)pyrene	4.46	0.0150	0.0300	"	"	"	---	111	"	---	---	
Benzo(b)fluoranthene	4.15	0.0150	0.0300	"	"	"	---	104	45-125%	---	---	
Benzo(k)fluoranthene	3.99	0.0150	0.0300	"	"	"	---	100	"	---	---	
Benzo(b+k)fluoranthene(s)	8.09	0.0300	0.0600	"	"	8.00	---	101	"	---	---	
Benzo(g,h,i)perylene	4.14	0.0100	0.0200	"	"	4.00	---	103	40-125%	---	---	
Chrysene	3.87	0.0100	0.0200	"	"	"	---	97	55-125%	---	---	

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AMENDED REPORT

12232 S.W. Garden Place
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Calbag Metals	Project:	Stormwater	
PO Box 10067	Project Number:	SCE	Reported:
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Batch 3120619 - EPA 3510C (Acid Extraction) **Water**

LCS (3120619-BS2) Prepared: 12/26/13 06:58 Analyzed: 12/27/13 15:30

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Dibenz(a,h)anthracene	4.04	0.0100	0.0200	ug/L	"	"	---	101	40-125%	---	---	
Fluoranthene	3.74	0.0100	0.0200	"	"	"	---	93	55-125%	---	---	
Fluorene	3.12	0.0100	0.0200	"	"	"	---	78	50-125%	---	---	
Indeno(1,2,3-cd)pyrene	4.08	0.0100	0.0200	"	"	"	---	102	45-125%	---	---	
1-Methylnaphthalene	3.18	0.0200	0.0400	"	"	"	---	80	45-120%	---	---	
2-Methylnaphthalene	3.23	0.0200	0.0400	"	"	"	---	81	"	---	---	
Naphthalene	2.90	0.0200	0.0400	"	"	"	---	73	40-125%	---	---	
Phenanthrene	3.37	0.0100	0.0200	"	"	"	---	84	50-125%	---	---	
Pyrene	3.71	0.0100	0.0200	"	"	"	---	93	"	---	---	
Carbazole	3.53	0.0150	0.0300	"	"	"	---	88	"	---	---	
Dibenzofuran	3.25	0.0100	0.0200	"	"	"	---	81	55-125%	---	---	
4-Chloro-3-methylphenol	3.59	0.250	0.500	"	"	"	---	90	45-120%	---	---	
2-Chlorophenol	3.39	0.250	0.500	"	"	"	---	85	35-120%	---	---	
2,4-Dichlorophenol	4.14	0.250	0.500	"	"	"	---	104	50-120%	---	---	Q-41
2,4-Dimethylphenol	3.46	0.250	0.500	"	"	"	---	87	30-120%	---	---	
2,4-Dinitrophenol	4.32	0.500	1.00	"	"	"	---	108	15-130%	---	---	
4,6-Dinitro-2-methylphenol	4.11	0.600	1.20	"	"	"	---	103	40-135%	---	---	
2-Methylphenol	3.04	0.250	0.500	"	"	"	---	76	40-120%	---	---	
3+4-Methylphenol(s)	2.77	0.250	0.500	"	"	"	---	69	30-120%	---	---	Q-41
2-Nitrophenol	3.85	0.250	0.500	"	"	"	---	96	40-120%	---	---	
4-Nitrophenol	1.54	0.250	0.500	"	"	"	---	39	10-140%	---	---	
Pentachlorophenol (PCP)	3.59	0.250	0.500	"	"	"	---	90	40-125%	---	---	Q-31
Phenol	1.37	0.500	1.00	"	"	"	---	34	10-120%	---	---	
2,3,4,6-Tetrachlorophenol	4.04	0.250	0.500	"	"	"	---	101	40-120%	---	---	
2,3,5,6-Tetrachlorophenol	3.81	0.250	0.500	"	"	"	---	95	"	---	---	
2,4,5-Trichlorophenol	3.94	0.250	0.500	"	"	"	---	99	50-120%	---	---	
2,4,6-Trichlorophenol	3.74	0.250	0.500	"	"	"	---	93	"	---	---	
Bis(2-ethylhexyl)phthalate	4.04	1.10	2.20	"	"	"	---	101	40-125%	---	---	
Butyl benzyl phthalate	4.01	1.50	3.00	"	"	"	---	100	45-125%	---	---	
Diethylphthalate	3.68	1.50	3.00	"	"	"	---	92	40-125%	---	---	
Dimethylphthalate	3.59	1.50	3.00	"	"	"	---	90	25-125%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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AMENDED REPORT

12232 S.W. Garden Place
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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3120619 - EPA 3510C (Acid Extraction)							**Water**					
LCS (3120619-BS2)					Prepared: 12/26/13 06:58	Analyzed: 12/27/13 15:30						
Di-n-butylphthalate	3.64	1.50	3.00	ug/L	"	"	---	91	55-125%	---	---	
Di-n-octyl phthalate	4.11	1.50	3.00	"	"	"	---	103	35-125%	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*84 %*	*Limits: 35-120 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*76 %*	*30-120 %*		*"*						
Phenol-d6 (Surr)			*30 %*	*10-120 %*		*"*						
p-Terphenyl-d14 (Surr)			*93 %*	*50-125 %*		*"*						
2-Fluorophenol (Surr)			*45 %*	*15-120 %*		*"*						
2,4,6-Tribromophenol (Surr)			*100 %*	*35-125 %*		*"*						
LCS Dup (3120619-BSD2)					Prepared: 12/26/13 06:58	Analyzed: 12/27/13 16:05						**Q-19**
EPA 8270D P/P/P												
Acenaphthene	3.17	0.0100	0.0200	ug/L	1	4.00	---	79	45-125%	0.9	30%	
Acenaphthylene	3.22	0.0100	0.0200	"	"	"	---	81	50-125%	1	30%	
Anthracene	3.32	0.0100	0.0200	"	"	"	---	83	55-125%	3	30%	
Benz(a)anthracene	3.71	0.0100	0.0200	"	"	"	---	93	"	1	30%	
Benzo(a)pyrene	4.30	0.0150	0.0300	"	"	"	---	108	"	3	30%	
Benzo(b)fluoranthene	4.09	0.0150	0.0300	"	"	"	---	102	45-125%	1	30%	
Benzo(k)fluoranthene	3.83	0.0150	0.0300	"	"	"	---	96	"	4	30%	
Benzo(b+k)fluoranthene(s)	7.89	0.0300	0.0600	"	"	8.00	---	99	"	3	30%	
Benzo(g,h,i)perylene	4.01	0.0100	0.0200	"	"	4.00	---	100	40-125%	3	30%	
Chrysene	3.77	0.0100	0.0200	"	"	"	---	94	55-125%	3	30%	
Dibenz(a,h)anthracene	3.94	0.0100	0.0200	"	"	"	---	98	40-125%	2	30%	
Fluoranthene	3.59	0.0100	0.0200	"	"	"	---	90	55-125%	4	30%	
Fluorene	3.06	0.0100	0.0200	"	"	"	---	76	50-125%	2	30%	
Indeno(1,2,3-cd)pyrene	3.96	0.0100	0.0200	"	"	"	---	99	45-125%	3	30%	
1-Methylnaphthalene	3.06	0.0200	0.0400	"	"	"	---	77	45-120%	4	30%	
2-Methylnaphthalene	3.08	0.0200	0.0400	"	"	"	---	77	"	5	30%	
Naphthalene	2.78	0.0200	0.0400	"	"	"	---	69	40-125%	5	30%	
Phenanthrene	3.27	0.0100	0.0200	"	"	"	---	82	50-125%	3	30%	
Pyrene	3.57	0.0100	0.0200	"	"	"	---	89	"	4	30%	
Carbazole	3.43	0.0150	0.0300	"	"	"	---	86	"	3	30%	
Dibenzofuran	3.17	0.0100	0.0200	"	"	"	---	79	55-125%	3	30%	

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Brian Cone, Industrial Services Manager

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D - Selected Analytes

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3120619 - EPA 3510C (Acid Extraction)							**Water**					
LCS Dup (3120619-BSD2)						Prepared: 12/26/13 06:58	Analyzed: 12/27/13 16:05					**Q-19**
4-Chloro-3-methylphenol	3.45	0.250	0.500	ug/L	"	"	---	86	45-120%	4	30%	
2-Chlorophenol	3.28	0.250	0.500	"	"	"	---	82	35-120%	3	30%	
2,4-Dichlorophenol	3.95	0.250	0.500	"	"	"	---	99	50-120%	5	30%	Q-41
2,4-Dimethylphenol	3.23	0.250	0.500	"	"	"	---	81	30-120%	7	30%	
2,4-Dinitrophenol	4.17	0.500	1.00	"	"	"	---	104	15-130%	4	30%	
4,6-Dinitro-2-methylphenol	3.94	0.600	1.20	"	"	"	---	98	40-135%	4	30%	
2-Methylphenol	2.91	0.250	0.500	"	"	"	---	73	40-120%	4	30%	
3+4-Methylphenol(s)	2.69	0.250	0.500	"	"	"	---	67	30-120%	3	30%	Q-41
2-Nitrophenol	3.68	0.250	0.500	"	"	"	---	92	40-120%	5	30%	
4-Nitrophenol	1.47	0.250	0.500	"	"	"	---	37	10-140%	5	30%	
Pentachlorophenol (PCP)	3.43	0.250	0.500	"	"	"	---	86	40-125%	5	30%	Q-31
Phenol	1.31	0.500	1.00	"	"	"	---	33	10-120%	5	30%	
2,3,4,6-Tetrachlorophenol	3.85	0.250	0.500	"	"	"	---	96	40-120%	5	30%	
2,3,5,6-Tetrachlorophenol	3.67	0.250	0.500	"	"	"	---	92	"	4	30%	
2,4,5-Trichlorophenol	3.82	0.250	0.500	"	"	"	---	95	50-120%	3	30%	
2,4,6-Trichlorophenol	3.66	0.250	0.500	"	"	"	---	92	"	2	30%	
Bis(2-ethylhexyl)phthalate	3.97	1.10	2.20	"	"	"	---	99	40-125%	2	30%	
Butyl benzyl phthalate	4.00	1.50	3.00	"	"	"	---	100	45-125%	0.3	30%	
Diethylphthalate	3.64	1.50	3.00	"	"	"	---	91	40-125%	1	30%	
Dimethylphthalate	3.55	1.50	3.00	"	"	"	---	89	25-125%	0.9	30%	
Di-n-butylphthalate	3.59	1.50	3.00	"	"	"	---	90	55-125%	1	30%	
Di-n-octyl phthalate	3.99	1.50	3.00	"	"	"	---	100	35-125%	3	30%	

Surr:		Recovery:		Limits:	Dilution:
Surr:	*Nitrobenzene-d5 (Surr)*	*Recovery:*	*80 %*	*Limits: 35-120 %*	*Dilution: 1x*
	2-Fluorobiphenyl (Surr)		*74 %*	*30-120 %*	*"*
	Phenol-d6 (Surr)		*29 %*	*10-120 %*	*"*
	p-Terphenyl-d14 (Surr)		*91 %*	*50-125 %*	*"*
	2-Fluorophenol (Surr)		*44 %*	*15-120 %*	*"*
	2,4,6-Tribromophenol (Surr)		*97 %*	*35-125 %*	*"*

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AMENDED REPORT

12232 S.W. Garden Place
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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010102 - EPA 3015A							**Water**					
Blank (4010102-BLK1)						Prepared: 01/07/14 09:42	Analyzed: 01/07/14 14:57					
EPA 200.8												
Antimony	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Arsenic	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.400	1.00	"	"	---	---	---	---	---	---	
Copper	ND	0.500	2.00	"	"	---	---	---	---	---	---	
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Manganese	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	
Blank (4010102-BLK2)						Prepared: 01/07/14 09:42	Analyzed: 01/07/14 16:41					
EPA 200.8												
Aluminum	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	Q-16
LCS (4010102-BS1)						Prepared: 01/07/14 09:42	Analyzed: 01/07/14 15:00					
EPA 200.8												
Aluminum	5880	25.0	50.0	ug/L	1	5560	---	106	85-115%	---	---	
Antimony	33.4	0.500	1.00	"	"	34.7	---	96	"	---	---	
Arsenic	55.5	0.500	1.00	"	"	55.6	---	100	"	---	---	
Cadmium	55.2	0.0400	0.200	"	"	"	---	99	"	---	---	
Chromium	56.1	0.400	1.00	"	"	"	---	101	"	---	---	
Copper	56.9	0.500	2.00	"	"	"	---	102	"	---	---	
Lead	59.7	0.100	0.200	"	"	"	---	107	"	---	---	
Manganese	58.8	0.500	1.00	"	"	"	---	106	"	---	---	
Mercury	1.03	0.0400	0.0800	"	"	1.11	---	93	"	---	---	
Nickel	56.3	0.500	1.00	"	"	55.6	---	101	"	---	---	
Silver	32.6	0.100	1.00	"	"	34.7	---	94	"	---	---	
Zinc	54.5	2.00	4.00	"	"	55.6	---	98	"	---	---	

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AMENDED REPORT

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Calbag Metals	Project:	**Stormwater**	
PO Box 10067	Project Number:	SCE	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010102 - EPA 3015A							**Water**					
LCS (4010102-BS2)						Prepared: 01/07/14 09:42	Analyzed: 01/07/14 16:44					
EPA 200.8												
Aluminum	5830	25.0	50.0	ug/L	1	5560	---	105	85-115%	---	---	Q-16

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AMENDED REPORT

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3120563 - Method Prep: Aq						**Water**						
Blank (3120563-BLK1)						Prepared: 01/03/14 09:00 Analyzed: 01/03/14 11:45						
SM 5310 B												
Total Organic Carbon	ND	---	1.00	mg/L	1	---	---	---	---	---	---	
LCS (3120563-BS1)						Prepared: 01/03/14 09:00 Analyzed: 01/03/14 12:10						
SM 5310 B												
Total Organic Carbon	10.0	---	1.00	mg/L	1	10.0	---	100	85-115%	---	---	

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AMENDED REPORT

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3120607 - Total Suspended Solids							**Water**					
Blank (3120607-BLK1)					Prepared: 12/24/13 12:45	Analyzed: 12/26/13 13:08						
SM 2540 D												
Total Suspended Solids	ND	---	5.00	mg/L	1	---	---	---	---	---	---	
Reference (3120607-SRM1)					Prepared: 12/24/13 12:45	Analyzed: 12/26/13 13:08						
SM 2540 D												
Total Suspended Solids	99.0	---		mg/L	1	100		99	90-110%	---	---	

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

Notes and Definitions

Qualifiers:

C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
J	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-16	Reanalysis of an original Batch QC sample.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-31	Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
Q-41	Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
R-04	Reporting levels elevated due to dilution necessary for analysis.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

*** Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Calbag Metals	Project: **Stormwater**	
PO Box 10067	Project Number: SCE	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	01/22/14 10:49

APEX LABS **CHAIN OF COUSTODY** Lab # A3L0541 COC 1 of 1

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Company: Calbag Metals Co Project Mgr: B. Cone Project Name: SCE Project #

Address: 2495 NW Nicolai St, Portland Phone: 503 226 3441 Fax: — Email: scott.deridder@calbag.com

Sampled by: SA. de Ridder

Site Location: (OR) WA Other: ______

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Metals (TOTAL DISS TCLP)	1200-COLS	1200-Z	TSS	TOC	PCBs	PAH/Pht.			
1	SCE 122013G01E		12/20/13	1614	W	8													X			X	X	X	X			
2	END																											
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Normal Turn Around Time (TAT) = 7-10 Business Days (YES) NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ______

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
- Refer to SAW w/ Table 2 for specific parameters
- Contact Scott A. de Ridder if any questions.
- do not dilute samples for analysis.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 12 20 13	Signature: [signature] Date: 12/20/13	Signature: Date:	Signature: Date:
Printed Name: Scott A. de Ridder Time: 1810	Printed Name: Cam O'Brien Time: 1810	Printed Name: Time:	Printed Name: Time:
Company: Calbag Metals Co.	Company: Apex	Company:	Company:

Apex Laboratories

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Brian Cone, Industrial Services Manager

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Thursday, March 6, 2014

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater - 1200Z / 2/17/14

Enclosed are the results of analyses for work order A4B0338, which was received by the laboratory on 2/17/2014 at 10:20:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

Apex Labs

12232 S.W. Garden Place
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503-718-0333 Fax

Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DA3021714G01E	A4B0338-01	Water	02/17/14 06:35	02/17/14 10:20

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3021714G01E (A4B0338-01)			**Matrix: Water**		**Batch: 4020522**			**C-07**
Aroclor 1016	ND	0.0000485	0.0000971	mg/L	1	02/25/14 10:55	608 PCB	
Aroclor 1221	ND	0.0000485	0.0000971	"	"	"	"	
Aroclor 1232	ND	0.0000485	0.0000971	"	"	"	"	
Aroclor 1242	ND	0.0000485	0.0000971	"	"	"	"	
Aroclor 1248	ND	0.0000485	0.0000971	"	"	"	"	
Aroclor 1254	ND	0.0000485	0.0000971	"	"	"	"	
Aroclor 1260	ND	0.0000485	0.0000971	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 96 %*	*Limits: 40-135 %*	"	"	"	

Brian L Cone

Brian Cone, Industrial Services Manager

Apex Labs

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Calbag Metals	Project:	**Stormwater - 1200Z**	
PO Box 10067	Project Number:	2/17/14	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/06/14 12:04

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3021714G01E (A4B0338-01RE1)			**Matrix: Water**		**Batch: 4020579**			**C-05**
Aldrin	ND	0.0000291	0.0000583	mg/L	1	02/26/14 10:54	608 Pest	
4,4'-DDE	ND	0.00000485	0.00000971	"	"	"	"	
4,4'-DDT	ND	0.0000291	0.0000583	"	"	"	"	
Dieldrin	ND	0.0000194	0.0000388	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)		*Recovery: 76 %*	*Limits: 25-140 %*		"	"	"	
Decachlorobiphenyl (Surr)		*96 %*	*Limits: 30-135 %*		"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Tigard, OR 97223
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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3021714G01E (A4B0338-01)			**Matrix: Water**		**Batch: 4020424**			**R-04**
Acenaphthene	ND	0.000962	0.000962	mg/L	4	02/20/14 18:24	EPA 625	
Anthracene	ND	0.000962	0.000962	"	"	"	"	
Benz(a)anthracene	ND	0.000962	0.000962	"	"	"	"	
Benzo(a)pyrene	ND	0.000962	0.000962	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000962	0.000962	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000962	0.000962	"	"	"	"	
Chrysene	ND	0.000962	0.000962	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000962	0.000962	"	"	"	"	
Fluoranthene	ND	0.000962	0.000962	"	"	"	"	
Fluorene	ND	0.000962	0.000962	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.000962	0.000962	"	"	"	"	
Pyrene	ND	0.000962	0.000962	"	"	"	"	
Pentachlorophenol (PCP)	ND	0.00385	0.00385	"	"	"	"	
Surrogate: 2-Fluorobiphenyl (Surr)		*Recovery: 80 %*	*Limits: 45-120 %*		"	"	"	
p-Terphenyl-d14 (Surr)		*90 %*	*Limits: 30-125 %*		"	"	"	
2,4,6-Tribromophenol (Surr)		*128 %*	*Limits: 35-125 %*		"	"	"	*S-06*

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Calbag Metals	Project:	**Stormwater - 1200Z**	
PO Box 10067	Project Number:	2/17/14	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/06/14 12:04

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3021714G01E (A4B0338-01)			**Matrix: Water**					
Batch: 4030003								
Cadmium	**0.000800**	0.0000400	0.000200	mg/L	1	03/03/14 19:06	EPA 200.8	
Chromium	**0.00160**	0.000400	0.00100	"	"	"	"	
Copper	**0.0367**	0.000500	0.00100	"	"	"	"	
Iron	**0.895**	0.0250	0.0500	"	"	"	"	
Lead	**0.0194**	0.000100	0.000200	"	"	"	"	
Mercury	ND	0.0000400	0.0000800	"	"	"	"	
Nickel	**0.0169**	0.000500	0.00100	"	"	"	"	
Zinc	**0.0704**	0.00200	0.00400	"	"	"	"	B-02
DA3021714G01E (A4B0338-01RE1)			**Matrix: Water**					
Batch: 4030003								
Aluminum	**0.192**	0.0250	0.0500	mg/L	1	03/04/14 13:29	EPA 200.8	

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3021714G01E (A4B0338-01)			**Matrix: Water**					
Batch: 4020363								
Chemical Oxygen Demand	**13.9**	---	10.0	mg/L	1	02/18/14 15:02	EPA 410.4	
Batch: 4020392								
Total Suspended Solids	ND	---	5.00	"	"	02/19/14 12:30	SM 2540 D	
Batch: 4020629								
HEM (Oil and Grease)	ND	---	4.81	"	"	02/28/14 14:54	EPA 1664	

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Calbag Metals	Project:	**Stormwater - 1200Z**	
PO Box 10067	Project Number:	2/17/14	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4020522 - EPA 3510C (Neutral pH)							**Water**					
Blank (4020522-BLK1)				Prepared: 02/24/14 10:16			Analyzed: 02/25/14 10:01					**C-07**
608 PCB												
Aroclor 1016	ND	0.0000455	0.0000909	mg/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.0000455	0.0000909	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.0000455	0.0000909	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.0000455	0.0000909	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.0000455	0.0000909	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.0000455	0.0000909	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.0000455	0.0000909	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)		*Recovery: 102 %*		*Limits: 40-135 %*			*Dilution: 1x*					
LCS (4020522-BS1)				Prepared: 02/24/14 10:16			Analyzed: 02/25/14 10:19					**C-07**
608 PCB												
Aroclor 1016	0.00172	0.0000500	0.000100	mg/L	1	0.00250	---	69	40-140%	---	---	
Aroclor 1260	0.00228	0.0000500	0.000100	"	"	"	---	91	"	---	---	
Surr: Decachlorobiphenyl (Surr)		*Recovery: 98 %*		*Limits: 40-135 %*			*Dilution: 1x*					
LCS Dup (4020522-BSD1)				Prepared: 02/24/14 10:16			Analyzed: 02/25/14 10:37					**C-07, Q-19**
608 PCB												
Aroclor 1016	0.00172	0.0000500	0.000100	mg/L	1	0.00250	---	69	40-140%	0.1	25%	
Aroclor 1260	0.00221	0.0000500	0.000100	"	"	"	---	88	"	3	25%	
Surr: Decachlorobiphenyl (Surr)		*Recovery: 95 %*		*Limits: 40-135 %*			*Dilution: 1x*					

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 608

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4020579 - EPA 3510C (Neutral pH)/3640A (GPC)							**Water**					
Blank (4020579-BLK1)						Prepared: 02/24/14 10:16	Analyzed: 02/26/14 10:00					**C-05**
608 Pest												
Aldrin	ND	0.0000273	0.0000545	mg/L	1	---	---	---	---	---	---	
4,4'-DDE	ND	0.00000455	0.00000909	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.0000273	0.0000545	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.0000182	0.0000364	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*60 %*	*Limits:*	*25-140 %*	*Dilution:*	*1x*					
Decachlorobiphenyl (Surr)			*90 %*		*30-135 %*		*"*					
LCS (4020579-BS1)						Prepared: 02/24/14 10:16	Analyzed: 02/26/14 10:18					**C-05**
608 Pest												
Aldrin	0.000377	0.0000300	0.0000600	mg/L	1	0.000500	---	75	25-140%	---	---	
4,4'-DDE	0.000485	0.00000500	0.0000100	"	"	"	---	97	35-140%	---	---	
4,4'-DDT	0.000537	0.0000300	0.0000600	"	"	"	---	107	45-140%	---	---	
Dieldrin	0.000492	0.0000200	0.0000400	"	"	"	---	98	60-130%	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*59 %*	*Limits:*	*25-140 %*	*Dilution:*	*1x*					
Decachlorobiphenyl (Surr)			*93 %*		*30-135 %*		*"*					
LCS Dup (4020579-BSD1)						Prepared: 02/24/14 10:16	Analyzed: 02/26/14 10:36					**C-05, Q-19**
608 Pest												
Aldrin	0.000433	0.0000300	0.0000600	mg/L	1	0.000500	---	87	25-140%	14	30%	
4,4'-DDE	0.000518	0.00000500	0.0000100	"	"	"	---	104	35-140%	7	30%	
4,4'-DDT	0.000538	0.0000300	0.0000600	"	"	"	---	108	45-140%	0.1	30%	
Dieldrin	0.000506	0.0000200	0.0000400	"	"	"	---	101	60-130%	3	30%	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*72 %*	*Limits:*	*25-140 %*	*Dilution:*	*1x*					
Decachlorobiphenyl (Surr)			*92 %*		*30-135 %*		*"*					

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Batch 4020424 - EPA 3510C (Acid Extraction) — **Water**

Blank (4020424-BLK1) Prepared: 02/20/14 07:22 Analyzed: 02/20/14 13:33

EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	ND	0.000227	0.000227	mg/L	1	---	---	---	---	---	---	
Anthracene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.000455	0.000455	"	"	---	---	---	---	---	---	
Chrysene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Fluorene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Pyrene	ND	0.000227	0.000227	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.000909	0.000909	"	"	---	---	---	---	---	---	

Surr: 2-Fluorobiphenyl (Surr)	*Recovery: 86 %*	*Limits: 45-120 %*	*Dilution: 1x*
p-Terphenyl-d14 (Surr)	*97 %*	*30-125 %*	*"*
2,4,6-Tribromophenol (Surr)	*107 %*	*35-125 %*	*"*

LCS (4020424-BS1) Prepared: 02/20/14 07:22 Analyzed: 02/20/14 14:11

EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	0.00713	0.000250	0.000250	mg/L	1	0.00800	---	89	47-145%	---	---	
Anthracene	0.00769	0.000250	0.000250	"	"	"	---	96	27-133%	---	---	
Benz(a)anthracene	0.00809	0.000250	0.000250	"	"	"	---	101	33-143%	---	---	
Benzo(a)pyrene	0.00849	0.000250	0.000250	"	"	"	---	106	17-163%	---	---	
Benzo(b)fluoranthene	0.00844	0.000250	0.000250	"	"	"	---	105	24-159%	---	---	
Benzo(k)fluoranthene	0.00801	0.000250	0.000250	"	"	"	---	100	11-162%	---	---	
Benzo(b+k)fluoranthene(s)	0.0163	0.000500	0.000500	"	"	0.0160	---	102	"	---	---	
Chrysene	0.00798	0.000250	0.000250	"	"	0.00800	---	100	17-168%	---	---	
Dibenz(a,h)anthracene	0.00821	0.000250	0.000250	"	"	"	---	103	1-227%	---	---	
Fluoranthene	0.00803	0.000250	0.000250	"	"	"	---	100	26-137%	---	---	
Fluorene	0.00758	0.000250	0.000250	"	"	"	---	95	59-121%	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 625

Batch 4020424 - EPA 3510C (Acid Extraction) — **Water**

LCS (4020424-BS1) Prepared: 02/20/14 07:22 Analyzed: 02/20/14 14:11

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Indeno(1,2,3-cd)pyrene	0.00793	0.000250	0.000250	mg/L	"	"	---	99	1-171%	---	---	
Pyrene	0.00807	0.000250	0.000250	"	"	"	---	101	52-115%	---	---	
Pentachlorophenol (PCP)	0.00819	0.00100	0.00100	"	"	"	---	102	14-176%	---	---	

Surr:	Recovery	Limits	Dilution
2-Fluorobiphenyl (Surr)	*78 %*	*45-120 %*	*1x*
p-Terphenyl-d14 (Surr)	*94 %*	*30-125 %*	*"*
2,4,6-Tribromophenol (Surr)	*111 %*	*35-125 %*	*"*

LCS Dup (4020424-BSD1) Prepared: 02/20/14 07:22 Analyzed: 02/20/14 14:47 **Q-19**

EPA 625

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	0.00688	0.000250	0.000250	mg/L	1	0.00800	---	86	47-145%	4	30%	
Anthracene	0.00747	0.000250	0.000250	"	"	"	---	93	27-133%	3	30%	
Benz(a)anthracene	0.00786	0.000250	0.000250	"	"	"	---	98	33-143%	3	30%	
Benzo(a)pyrene	0.00830	0.000250	0.000250	"	"	"	---	104	17-163%	2	30%	
Benzo(b)fluoranthene	0.00818	0.000250	0.000250	"	"	"	---	102	24-159%	3	30%	
Benzo(k)fluoranthene	0.00761	0.000250	0.000250	"	"	"	---	95	11-162%	5	30%	
Benzo(b+k)fluoranthene(s)	0.0156	0.000500	0.000500	"	"	0.0160	---	97	"	4	30%	
Chrysene	0.00776	0.000250	0.000250	"	"	0.00800	---	97	17-168%	3	30%	
Dibenz(a,h)anthracene	0.00799	0.000250	0.000250	"	"	"	---	100	1-227%	3	30%	
Fluoranthene	0.00782	0.000250	0.000250	"	"	"	---	98	26-137%	3	30%	
Fluorene	0.00734	0.000250	0.000250	"	"	"	---	92	59-121%	3	30%	
Indeno(1,2,3-cd)pyrene	0.00763	0.000250	0.000250	"	"	"	---	95	1-171%	4	30%	
Pyrene	0.00775	0.000250	0.000250	"	"	"	---	97	52-115%	4	30%	
Pentachlorophenol (PCP)	0.00860	0.00100	0.00100	"	"	"	---	107	14-176%	5	30%	

Surr:	Recovery	Limits	Dilution
2-Fluorobiphenyl (Surr)	*77 %*	*45-120 %*	*1x*
p-Terphenyl-d14 (Surr)	*89 %*	*30-125 %*	*"*
2,4,6-Tribromophenol (Surr)	*110 %*	*35-125 %*	*"*

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Calbag Metals	Project:	Stormwater - 1200Z	
PO Box 10067	Project Number:	2/17/14	Reported:
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4030003 - EPA 3015A							**Water**					
Blank (4030003-BLK1)						Prepared: 03/01/14 11:16	Analyzed: 03/03/14 14:58					
EPA 200.8												
Aluminum	ND	0.0250	0.0500	mg/L	1	---	---	---	---	---	---	
Cadmium	ND	0.0000400	0.000200	"	"	---	---	---	---	---	---	
Chromium	ND	0.000400	0.00100	"	"	---	---	---	---	---	---	
Copper	ND	0.000500	0.00100	"	"	---	---	---	---	---	---	
Iron	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	
Lead	ND	0.000100	0.000200	"	"	---	---	---	---	---	---	
Mercury	ND	0.0000400	0.0000800	"	"	---	---	---	---	---	---	
Nickel	ND	0.000500	0.00100	"	"	---	---	---	---	---	---	
Zinc	ND	0.00200	0.00400	"	"	---	---	---	---	---	---	
LCS (4030003-BS1)						Prepared: 03/01/14 11:16	Analyzed: 03/03/14 15:01					
EPA 200.8												
Aluminum	5.64	0.0250	0.0500	mg/L	1	5.56	---	102	85-115%	---	---	
Cadmium	0.0533	0.0000400	0.000200	"	"	0.0556	---	96	"	---	---	
Chromium	0.0590	0.000400	0.00100	"	"	"	---	106	"	---	---	
Copper	0.0586	0.000500	0.00100	"	"	"	---	105	"	---	---	
Iron	5.92	0.0250	0.0500	"	"	5.56	---	107	"	---	---	
Lead	0.0551	0.000100	0.000200	"	"	0.0556	---	99	"	---	---	
Mercury	0.00109	0.0000400	0.0000800	"	"	0.00111	---	98	"	---	---	
Nickel	0.0569	0.000500	0.00100	"	"	0.0556	---	102	"	---	---	
Zinc	0.0542	0.00200	0.00400	"	"	"	---	98	"	---	---	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4020363 - Method Prep: Aq						**Water**						
Blank (4020363-BLK1)						Prepared: 02/18/14 10:48 Analyzed: 02/18/14 15:02						
EPA 410.4												
Chemical Oxygen Demand	ND	---	10.0	mg/L	1	---	---	---	---	---	---	
LCS (4020363-BS1)						Prepared: 02/18/14 10:48 Analyzed: 02/18/14 15:02						
EPA 410.4												
Chemical Oxygen Demand	54.8	---	10.0	mg/L	1	50.0	---	110	90-110%	---	---	

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4020392 - Total Suspended Solids						**Water**						
Blank (4020392-BLK1)						Prepared: 02/19/14 09:35	Analyzed: 02/19/14 12:30					
SM 2540 D												
Total Suspended Solids	ND	---	1.00	mg/L	1	---	---	---	---	---	---	
Reference (4020392-SRM1)						Prepared: 02/19/14 09:35	Analyzed: 02/19/14 12:30					
SM 2540 D												
Total Suspended Solids	92.0	---		mg/L	1	100		92	90-110%	---	---	

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4020629 - EPA 1664							**Water**					
Blank (4020629-BLK1)						Prepared: 02/27/14 07:30 Analyzed: 02/28/14 14:54						
EPA 1664												
HEM (Oil and Grease)	ND	---	4.55	mg/L	1	---	---	---	---	---	---	
LCS (4020629-BS1)						Prepared: 02/27/14 07:30 Analyzed: 02/28/14 14:54						
EPA 1664												
HEM (Oil and Grease)	38.8	---		mg/L	1	40.0	---	97	78-114%	---	---	

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

Notes and Definitions

Qualifiers:

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
R-04	Reporting levels elevated due to dilution necessary for analysis.
S-06	Surrogate recovery is outside of established control limits.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Brian L Cone

Brian Cone, Industrial Services Manager

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 2/17/14	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/06/14 12:04

APEX LABS **CHAIN OF CUSTODY** Lab # A4B0338 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals Co. Project Mgr: B. Cone Project Name: 1200Z Project #: —

Address: 2495 NW Nicolai St, Portland OR 97210 Phone: 503 226 3441 Fax: — Email: scott.deridder@calbag.com

Sampled by:

Site Location: OR WA Other:

ANALYSIS REQUEST

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200-COLS	1200-Z	O&G	TSS	Pesticides:	PCP	PAHs	COD	PCBs
1 DA3021714G01E		02/17/14	0625	W	10													X		X	X	X	X	X	X	X	X
2 end																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other:

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
- Pesticides: Aldrin, Dieldrin, DDT, DDE
- PCBs: 1016, ~~to~~ 1221, 1232, 1242, 1248, 1254, 1260
- PAHs: 12 as per Calbag Permit.
- please ensure that MRLs meet permit requirements.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 2/17	Signature: [signature] Date: 2/17/14	Signature: Date:	Signature: Date:
Printed Name: Alyssa Boatwinkle Time: 10:21	Printed Name: J. Sutt Time: 1020	Printed Name: Time:	Printed Name: Time:
Company: Calbag Metals Co.	Company: Apex	Company:	Company:

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[signature]

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Monday, March 24, 2014

Scott A. de Ridder
Calbag Metals
PO Box 10067
Portland, OR 97296

RE: Stormwater - 1200Z / 3/8/14 G01E

Enclosed are the results of analyses for work order A4C0295, which was received by the laboratory on 3/10/2014 at 11:04:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: BCone@apex-labs.com, or by phone at 503-718-2323.

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DA3030814 G01E	A4C0295-01	Water	03/08/14 19:35	03/10/14 11:04

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3030814 G01E (A4C0295-01)			**Matrix: Water**					
Batch: 4030564								
Aluminum	ND	---	0.250	mg/L	5	03/21/14 17:20	EPA 200.8	R-04
Cadmium	**0.000878**	---	0.000200	"	1	03/21/14 16:39	"	
Chromium	**0.00100**	---	0.00100	"	"	"	"	
Iron	**0.296**	---	0.0500	"	"	"	"	
Lead	**0.00497**	---	0.000200	"	"	"	"	
Nickel	**0.0262**	---	0.00100	"	"	"	"	
Zinc	**0.0520**	---	0.00400	"	"	"	"	
DA3030814 G01E (A4C0295-01RE1)			**Matrix: Water**					
Batch: 4030286								
Copper	**0.0169**	---	0.00500	mg/L	5	03/12/14 12:56	EPA 200.8	

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Calbag Metals	Project:	**Stormwater - 1200Z**	
PO Box 10067	Project Number:	3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/24/14 16:11

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
DA3030814 G01E (A4C0295-01)			**Matrix: Water**					
Batch: 4030322								
Total Suspended Solids	ND	---	5.00	mg/L	1	03/13/14 12:30	SM 2540 D	
Batch: 4030460								
Chemical Oxygen Demand	**19.6**	---	10.0	"	"	03/18/14 10:48	EPA 410.4	
Batch: 4030536								
HEM (Oil and Grease)	ND	---	4.85	"	"	03/20/14 15:29	EPA 1664	

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Calbag Metals	Project:	**Stormwater - 1200Z**	
PO Box 10067	Project Number:	3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/24/14 16:11

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4030286 - EPA 3015A							**Water**					
Blank (4030286-BLK1)						Prepared: 03/11/14 16:43	Analyzed: 03/12/14 12:08					
EPA 200.8												
Copper	ND	---	0.00100	mg/L	1	---	---	---	---	---	---	
LCS (4030286-BS1)						Prepared: 03/11/14 16:43	Analyzed: 03/12/14 12:11					
EPA 200.8												
Copper	0.0559	---	0.00100	mg/L	1	0.0556	---	101	85-115%	---	---	
Duplicate (4030286-DUP2)						Prepared: 03/11/14 16:43	Analyzed: 03/12/14 12:58					
QC Source Sample: DA3030814 G01E (A4C0295-01)												
EPA 200.8												
Copper	**0.0172**	---	0.00500	mg/L	5	---	0.0175	---	---	2	20%	Q-16
Matrix Spike (4030286-MS2)						Prepared: 03/11/14 16:43	Analyzed: 03/12/14 13:28					
QC Source Sample: DA3030814 G01E (A4C0295-01)												
EPA 200.8												
Copper	0.0743	---	0.00500	mg/L	5	0.0556	0.0175	102	70-130%	---	---	Q-16
Batch 4030564 - EPA 3015A							**Water**					
Blank (4030564-BLK1)						Prepared: 03/20/14 14:51	Analyzed: 03/21/14 15:39					
EPA 200.8												
Aluminum	ND	---	0.0500	mg/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.000200	"	"	---	---	---	---	---	---	
Chromium	ND	---	0.00100	"	"	---	---	---	---	---	---	
Iron	ND	---	0.0500	"	"	---	---	---	---	---	---	
Lead	ND	---	0.000200	"	"	---	---	---	---	---	---	
Nickel	ND	---	0.00100	"	"	---	---	---	---	---	---	
Zinc	ND	---	0.00400	"	"	---	---	---	---	---	---	
LCS (4030564-BS1)						Prepared: 03/20/14 14:51	Analyzed: 03/21/14 15:45					
EPA 200.8												
Aluminum	5.44	---	0.0500	mg/L	1	5.56	---	98	85-115%	---	---	
Cadmium	0.0526	---	0.000200	"	"	0.0556	---	95	"	---	---	
Chromium	0.0549	---	0.00100	"	"	"	---	99	"	---	---	

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4030564 - EPA 3015A						**Water**						
LCS (4030564-BS1)					Prepared: 03/20/14 14:51	Analyzed: 03/21/14 15:45						
Iron	5.39	---	0.0500	mg/L	"	5.56	---	97	"	---	---	
Lead	0.0532	---	0.000200	"	"	0.0556	---	96	"	---	---	
Nickel	0.0563	---	0.00100	"	"	"	---	101	"	---	---	
Zinc	0.0523	---	0.00400	"	"	"	---	94	"	---	---	

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Calbag Metals	Project:	**Stormwater - 1200Z**	
PO Box 10067	Project Number:	3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager:	Scott A. de Ridder	03/24/14 16:11

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4030322 - Total Suspended Solids							**Water**					
Blank (4030322-BLK1)						Prepared: 03/12/14 17:20	Analyzed: 03/13/14 12:30					
SM 2540 D												
Total Suspended Solids	ND	---	1.00	mg/L	1	---	---	---	---	---	---	
Reference (4030322-SRM1)						Prepared: 03/12/14 17:20	Analyzed: 03/13/14 12:30					
SM 2540 D												
Total Suspended Solids	98.0	---		mg/L	1	100		98	90-110%	---	---	

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Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4030460 - Method Prep: Aq						Water						
Blank (4030460-BLK1)						Prepared: 03/18/14 07:43 Analyzed: 03/18/14 10:48						
EPA 410.4												
Chemical Oxygen Demand	ND	---	10.0	mg/L	1	---	---	---	---	---	---	
LCS (4030460-BS1)						Prepared: 03/18/14 07:43 Analyzed: 03/18/14 10:48						
EPA 410.4												
Chemical Oxygen Demand	49.5	---	10.0	mg/L	1	50.0	---	99	90-110%	---	---	
Duplicate (4030460-DUP1)						Prepared: 03/18/14 07:43 Analyzed: 03/18/14 10:48						
QC Source Sample: DA3030814 G01E (A4C0295-01)												
EPA 410.4												
Chemical Oxygen Demand	**21.8**	---	10.0	mg/L	1	---	19.6	---	---	11	10%	Q-05
Matrix Spike (4030460-MS1)						Prepared: 03/18/14 07:43 Analyzed: 03/18/14 10:48						
QC Source Sample: DA3030814 G01E (A4C0295-01)												
EPA 410.4												
Chemical Oxygen Demand	78.6	---	11.1	mg/L	1	55.6	19.6	106	90-110%	---	---	

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4030536 - EPA 1664							**Water**					
Blank (4030536-BLK1)					Prepared: 03/20/14 07:04 Analyzed: 03/20/14 15:29							
EPA 1664												
HEM (Oil and Grease)	ND	---	4.55	mg/L	1	---	---	---	---	---	---	
LCS (4030536-BS1)					Prepared: 03/20/14 07:04 Analyzed: 03/20/14 15:29							
EPA 1664												
HEM (Oil and Grease)	37.1	---		mg/L	1	40.0	---	93	78-114%	---	---	
Matrix Spike (4030536-MS1)					Prepared: 03/20/14 07:04 Analyzed: 03/20/14 15:29							
QC Source Sample: DA3030814 G01E (A4C0295-01)												
EPA 1664												
HEM (Oil and Grease)	37.1	---		mg/L	1	39.6	0.291	93	78-114%	---	---	

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

Notes and Definitions

Qualifiers:

Q-05 Analyses are not controlled on RPD values from sample or duplicate concentrations below 5 times the reporting level.

Q-16 Reanalysis of an original Batch QC sample.

R-04 Reporting levels elevated due to dilution necessary for analysis.

Notes and Conventions:

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.

RPD Relative Percent Difference

MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.

WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.

Batch QC Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.

Blank Policy Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

--- QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

*** Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Brian Cone, Industrial Services Manager

Calbag Metals	Project: **Stormwater - 1200Z**	
PO Box 10067	Project Number: 3/8/14 G01E	**Reported:**
Portland, OR 97296	Project Manager: Scott A. de Ridder	03/24/14 16:11

APEX LABS **CHAIN OF CUSTODY** Lab # A4C0295 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Calbag Metals Project Mgr: B. Cone Project Name: 1200Z Project #

Address: 2995 NW Nicolai St, Portland, OR 97210 Phone: 503 226-3441 Fax: — Email: Scott.deridder@calbag.com

Sampled by: SA de Ridder

Site Location: OR WA Other:

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	608 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200-COLS	1200-Z	TSS	O+G	COD
1	DA3030814 G01E		03/08/14	1935	W	5													X			X	X	X
2	Total																							
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ______

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 3/10	Signature: [signature] Date: 3/10	Signature: Date:	Signature: Date:
Printed Name: Albert Boudang Time: 11:04	Printed Name: T. Scott Time: 1104	Printed Name: Time:	Printed Name: Time:
Company: Calbag Metals	Company: Apex	Company:	Company:

Appendix P

Operation and Maintenance Manuals

StormwaterRX Systems Clara, Retenu and Aquip

2495 NW Nicolai Street

clara®

Stormwater Separator
Operation & Maintenance Manual

stormwateRx™
Reclaiming the world's water.

www.stormwaterx.com

122 Southeast 27th Avenue
Portland, OR 97214

(800) 680-3543

Ver7

Installed Clara
Project Specifications

stormwateRx®
Reclaiming the world's water.®

Site Name: ______________________________

Address: ______________________________

____

Date Installed: ______________________________

Treatment Flow Capacity: ______________________________

Model Number: ______________________________

Vault Material: ______________________________

Footprint: ________ Ft **x** ________ Ft

Depth from floor of Clara to ground surface: ________ Ft ________ In

Treatment Type: ☐ Pretreatment

☐ Primary

Pump Specifications (if applicable):

Provided by StormwateRx: ☐ Yes ☐ No

Location of Pump: ______________________________

Pump Manufacturer: ______________________________

Pump Model Number: ______________________________

StormwateRx Installation Staff: ______________________________

Other Notes:

____

____

____

____

____

Table of Contents

Important!

Do not neglect upstream source control and stormwater management once the Clara is installed. The best water quality results are accomplished by the combination of source control and treatment BMPs.

Do not flush spills or otherwise use the Clara to capture pollutants from stormwater drain line, jetting, or pavement washing. The Clara is not designed to treat pollutants of this variety.

Do not enter any chamber within the Clara without the required OSHA Confined Space training.

Stormwater sampling should be done with care. Avoid sampling from the Clara's outfall if at that location the outfall is shared with other sources of stormwater. Also use new bottles and avoid making contact with any surface when taking samples.

The Clara should be maintained at a minimum of once a year. Inspection of the Clara is necessary to determine the proper maintenance interval.

1 Introduction and System Description

Clara® is a patented oil-water solids separator that removes dirt, oil and floatables by gravity separation. Polluted stormwater is directed to the two settling chambers for removal of dirt, oil and floatables. Cleaner stormwater flows to the outlet chamber for discharge. With the built-in internal high flow bypass, pollutants are trapped in the settling chambers of this below ground structure even during excessive runoff events.

Clara can be used as stand-alone treatment or in as a pretreatment device in a treatment train configuration. When installed as pretreatment, the Clara will prolong the maintenance interval and improve the function of the downstream treatment system (i.e. filtration or oil / water separator). The Clara is beneficial for sites with high concentrations of oil and solids in the stormwater or on sites with a likelihood of oil spills.

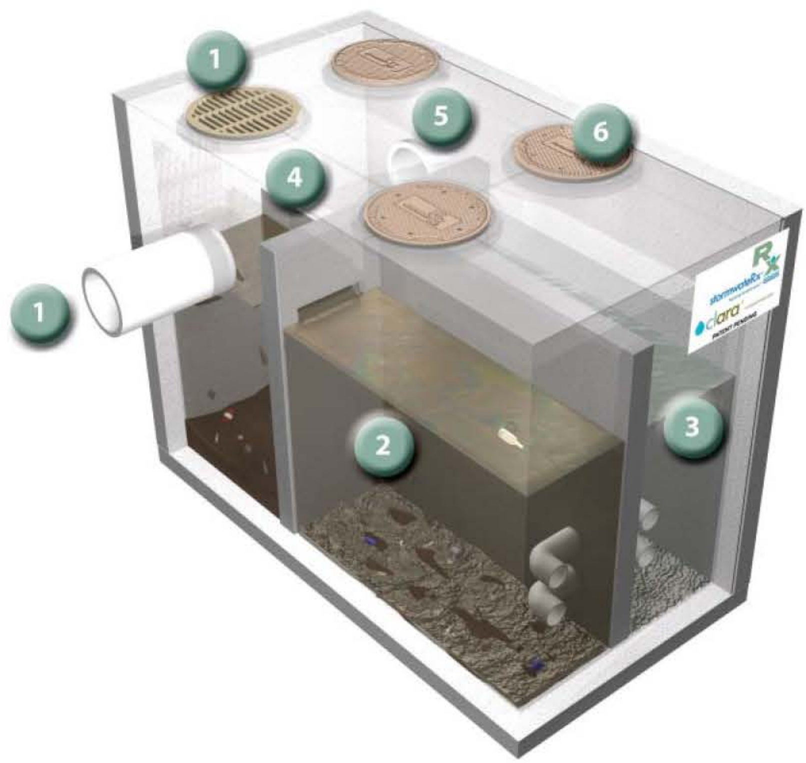


Figure 1: Clara Stormwater Separator

1.1 Clara Features

(1) **Inlet:** Stormwater runoff enters the inlet chamber of the Clara by way of an inlet pipe and/or inlet grate. For most storms, stormwater is then directed through the **treatment flow inlet** which distributes stormwater into the **oil and grit chamber**.

(2) **Oil and grit chamber:** The treatment flow transfers from the inlet chamber through the treatment flow inlet into the oil and grit chamber, the first of the two **settling chambers**.

In this chamber, coarse debris and oil are removed from the stormwater by gravity settling and floatation. Retention time is maximized by the long flow path to the **plug flow conduit** which transfers flow to the settleable solids chamber.

(3) **Settleable solids chamber:** The settleable solids chamber is the second settling chamber where the stormwater is given more opportunity for settling thereby removing the medium sized particulates. A **floating oil boom** is also installed in the settleable solids chamber. This item is tethered to the top of the manhole for easy replacement. The **outlet orifice elbow** in this chamber serves to control the flow rate through the settling chambers and retain floatables within the Clara.

(4) **High flow bypass:** For storms that exceed the treatment design capacity of the Clara, stormwater moves directly from the inlet chamber to the outlet chamber by flowing over the internal high flow bypass weir. This is done to prevent scouring within the Clara **settling chambers** during peak flow events.

(5) **Outlet:** Stormwater discharges from the Clara by way of the outlet chamber. The treatment flow reaches the outlet chamber from the settleable solids chamber by way of a down-turned orifice, which controls the flow rate out of the settling chamber. Storms exceeding the treatment design capacity enter the outlet chamber from over the high flow bypass weir. Stormwater discharges by gravity through the Clara outlet pipe. A **pump** may be located in the outlet chamber to pump water from the Clara to an above ground treatment system.

(6) **Access manholes:** For maintenance, the inlet, outlet, and settling chambers can be accessed by way of the manhole covers.

The "Installed Clara Project Specifications" sheet provides the details of the system installed at your site. Refer to this document for details on your site-specific Clara system.

1.2 Typical Installation Configurations

In most applications, the Clara is installed below ground and inline with the existing storm drain lines. In these applications, stormwater can continue to flow by gravity out of the Clara to be discharged offsite.

The inlet and outlet chambers of the Clara can be distinguished based upon the direction of stormwater flow at your facility. The inlet and outlet chambers cannot be distinguished based upon their proximity to the other chambers of the Clara alone. The direction of flow is shown in Figure 2 to help identify the inlet and outlet chambers of the Clara. For Clara systems with a grate inlet, the inlet chamber can be identified as the chamber under the grate. For Clara systems with a pump, the outlet chamber can be identified as the chamber with the pump.

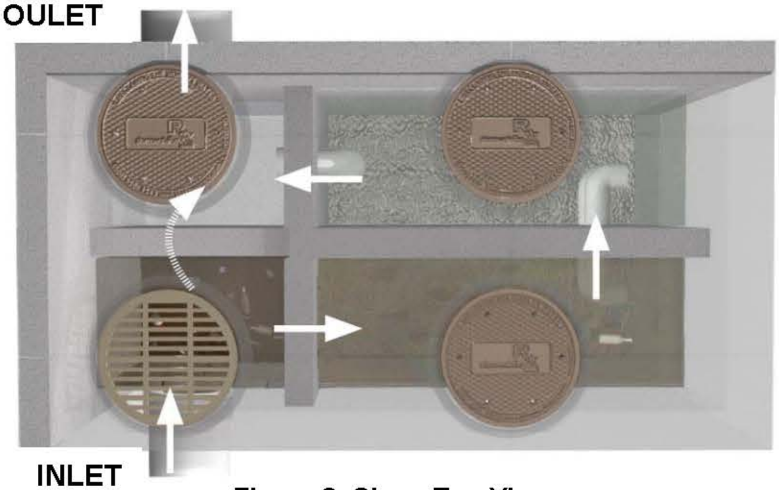


Figure 2. Clara, Top View

2 Clara Operations

Regular inspection and maintenance is required for the proper operation of the Clara. Site conditions vary such that the maintenance requirements cannot be prescribed without regular inspections. Inspections determine the frequency of maintenance required and also verify that the system is operating at optimal conditions. Stormwater sampling should be done with care.

2.1 Inspections

After installation, the Clara should be inspected monthly during the first rainy season to establish site-specific inspection and maintenance intervals. Thereafter, inspections should be completed before the wet-weather season and after a major storm event, or as observed pollutant accumulation dictates. An Inspection Report Form is included at the end of this manual and should be completed with each inspection. A copy should also be added to your Stormwater Pollution Prevention Plan.

Sediment accumulation within the Clara should be monitored to keep the system operating at optimal conditions. Most solids will accumulate along the side wall and corners of the oil and grit chamber, and settleable soilds chamber. Accumulation of heavy sediment may also collect in the inlet and outlet chambers so it is good practice to monitor the sediment accumulation in these chambers as well. The following inspection procedure should generally be followed for the Clara systems:

1. Set up safety equipment if the system is near vehicle and pedestrian traffic.
2. Remove a single manhole cover on the top of the Clara.
3. Determine the depth of solids and oil accumulating inside the Clara by using the provided Sludge Judge sampling device. Assemble the device and slowly lower it to the bottom of the Clara making sure that the bottom of the device is facing down (Figure 3).
4. Pull the Sludge Judge straight up and out of the Clara. A column of water is trapped within the sampling device by the float valve at the bottom of the device. The 1-ft

increments marked on the side of the sampling device should be used to identify the amount of solids and oil inside the chamber.

5. Record the thickness of the accumulated solids and oil in the Inspection Report Form. Figure 2 (above) can be used to help with the orientation of the Clara chambers.
6. Empty the contents from the sampling device by depressing the pin on the bottom of the sampling device against the ground.
7. Conduct a sample in a different location within the chamber. More solids may be found along the chambers' side walls.
8. Repeat steps 3 – 7 until for several locations within the chamber.
9. Replace the manhole cover.
10. Repeat Steps 2 – 9 for the remaining chambers (total of 4 chambers).

Figure 3. Sludge Judge® Sampling Device

The floating oil boom should also be inspected and replaced when necessary. Inspect the size and density of the floating oil booms by pulling up the booms from the tether. The booms should be replaced when the media inside are fully swollen and solidly filling the cloth sacks.

2.2 Sampling Protocol and Methodology

Water quality samples should be taken only when the system has been maintained and is operating effectively (see Section 3). The Clara can be sampled in a variety of methods depending on the system's configuration. For all stormwater sampling, use caution to prevent contamination. Contamination can occur by making contact with the walls of the Clara, the surfaces of inlet or outlet plumbing, or the sample collector's hands.

SAMPLING SHOULD NOT BE DONE DURING HIGH FLOW EVENTS. THE STORMWATER WILL ONLY RECEIVE PARTIAL TREATMENT AT THESE TIMES.

The influent water quality should be measured by sampling from the Clara's inlet chamber following steps 1 – 4 below.

1. Remove the manhole cover above the Clara's inlet *(or outlet)* chamber.
2. Identify the separate inlet and outlet chambers within the Clara. This will require some prior knowledge of the direction of stormwater flow within the catch basin's onsite (see Section 1.2).
3. Verify that the stormwater is NOT currently passing over the High Flow Bypass indicating that the Clara's treatment capacity has been reached. Sampling should only be done when the system is operating within its treatment capacity.
4. Using a long handled sampling device, collect water from the center of the inlet *(or outlet)* chamber approximately 3 inches below the water's surface.

Effluent sampling can be done using either the Clara's outlet chamber or the system's outfall. However, avoid sampling from the Clara's outfall if at that location the outfall is shared with other sources of stormwater. In this case, the Clara's effluent should be sampled from the outlet chamber to prevent comingling of treated and untreated stormwater in the sample. The outlet chamber should be sampled by following steps 1 – 4 above.

StormwateRx recommends sampling the inlet to the Clara each time that the outlet is sampled. Without the inlet sample data, StormwateRx LLC cannot diagnose or provide recommendations on tuning system performance. The outlet should be sampled approximately 15 minutes after sampling the inlet to get the most representative inlet/outlet sample pair.

3 Maintenance Guidelines

The Clara should be maintained at a minimum of once a year or when solids accumulation at the base of any of the four chambers is 12 inches or more. Maintenance should also be conducted if greater than 6 inches of oil is observed on the water surface. Refer to Section 2.1 for the inspection guidelines to determine the amount of solids and oil accumulation within the Clara. To maintain the Clara, use a certified vacuum truck service to remove the accumulated pollutants from all four chambers of the Clara. This should be done during dry weather conditions.

THE CLARA SHOULD BE MAINTAINED AT A MINIMUM OF ONCE A YEAR. CLEANING THE CLARA BEFORE THE ONSET OF THE RAINY SEASON IS RECOMMENDED.

Figure 4. Vactor truck used for Clara maintenance

4 Sediment Disposal

Water and sediment removed from the Clara must be disposed in accordance with all applicable waste disposal regulations. Most vacuum truck services offer the appropriate disposal of the contents removed from the Clara. The accumulated sediment from the Clara can typically be sent to the local landfill once it has been dried. Follow local regulations for standard guidelines for solid waste disposal.

The vacuum service may want to know the total volume that needs to be pumped. The total volume (water and pollutants) stored within the Clara is provided in Table 1.

Table 1. Clara Storage Volumes

Clara Model	Per Cycle Disposal Volume (yd^3)
25C/CP	8
40C/CP	12
90C/CP	23

5 Maintenance Support

If you have any questions about maintenance procedures contact StormwateRx at (800) 680-3543. Please have your Clara Model number ready.

6 Best Management Practice Requirements

Achieving the benchmarks consistently requires rigorous implementation of best management practices (BMPs) including source control, structural and treatment BMPs. Treatment BMPs (i.e. the Clara separator) are not designed to operate in the absence of other BMPs. In most cases, employing source control practices on a regular basis is necessary to reach stormwater quality benchmarks.

Your Stormwater Pollution Prevention (or Control) Plan (SWPPP or SWPCP) should address the BMPs appropriate for your facility. During normal business operation, make sure that all best management practices are deployed and maintained. When engaging in operations that are atypical of standard business practices, please utilize source control measures to keep pollutants out of the stormwater. The following are a few examples of typically employed practices.

- **Sweeping:** Sweep site on a regular basis, such as daily, weekly or bi-monthly, especially in areas of heavy industrial activities.
- **Covering activities:** When practical, cover significant materials or industrial operations that are outdoors, to prevent stormwater contact with potential pollutants.
- **Spill control:** When a spill occurs, contain and use onsite spill kits to dispose of material.
- **Catch basin and stormwater conveyance clean out:** The Clara should be cleaned/maintained after cleaning your catch basins and stormwater conveyance systems.

DO NOT USE THE CLARA AS THE PRIMARY MEANS FOR SPILL CONTROL

Trademarks and Disclaimers

This document is subject to change without notice.

StormwateRx LLC
122 Southeast 27th Avenue
Portland, Oregon, 97214
(800) 680 - 3543

Clara Maintenance Report

stormwateRx™
Reclaiming the world's water.

www.stormwaterx.com
122 Southeast 27th Avenue
Portland, OR 97214
(800) 680-3543

Maintenance Date: ____________________

Location: ____________________

Model Number: ____________________

Date of Last Service: ____________________

Current Inspector: ____________________

Thickness of Accumulated Sediment Layer

Inlet Chamber: ____________ inches

Oil and Grit Chamber: ____________ inches

Settleable Solids Chamber: ____________ inches

Outlet Chamber: ____________ inches

Details:

____

____

____

Maintenance Activities Completed:

Vacuumed Inlet Chamber: ☐ Yes ☐ No Details: ____________

Vacuumed Oil and Grit Chamber: ☐ Yes ☐ No Details: ____________

Vacuumed Settleable Solids Chamber: ☐ Yes ☐ No Details: ____________

Vacuumed Outlet Chamber: ☐ Yes ☐ No Details: ____________

Other Notes:

____

____

____

____

____

____

____

____

Clara Inspection Report

stormwateRx™
Reclaiming the world's water.

www.stormwaterx.com
122 Southeast 27th Avenue
Portland, OR 97214
(800) 680-3543

Location: ______________________

Date Installed: ______________________

System Model: ______________________

Date:	Inspected by:	Thickness of Accumulated Sediment Layer in Inlet Chamber:	Oil & Grease Chamber:	Settleable Solids Chamber:	Maintenance Needed (sediment layer ≥ 1 ft)?	Notes:

INSPECTIONS

Sediment accumulation within the Clara should be monitored to keep the system operating at optimal conditions. Most solids will accumulate along the side wall and corners of the oil & grit chamber, and settleable soilds chamber. Accumulation of sediment may collect in the inlet chamber so it is good practice to monitor the sediment accumulation in this chamber as well. The following inspection procedure should generally be followed for the Clara systems:

1. Set up safety equipment if the system is near vehicle and pedestrian traffic.
2. Remove the manhole cover from the inlet chamber.
3. Determine the depth of sediment accumulation in the inlet chamber using a measuring stick or another similar device**. The measuring stick must be pushed through the sediment layer until it reaches the floor of the Clara. Once reaching the floor of the Clara, slowly remove the measuring stick. The depth of the sediment accumulation can be measured by the mud line remaining of the measuring stick.
4. Record the thickness of accumulated sediment in the Inspection Report Form.
5. Replace the manhole cover.

**For the depth of the floor of the Clara from the ground surface, please refer to the Installed Clara Project Specifications included as the first page of the O&M manual.

MAINTENANCE REQUIREMENTS

The Clara should be maintained a minimum of every other year or when one foot of sediment has accumulated at the bottom of the settling chambers. The Clara should be maintained using a certified vacuum truck service to remove the accumulated pollutants in the inlet chamber, the oil and grit chamber, and the settleable solids chamber. Cleaning should be done during dry weather conditions.

SEDIMENT DISPOSAL

Water and sediment removed from the Clara must be disposed in accordance with all applicable waste disposal regulations. Most vacuum truck services offer the appropriate disposal of the contents removed from the Clara. The accumulated sediment from the Clara can typically be sent to the local landfill once it has been dried. Follow local regulations for standard guidelines for solid waste disposal.

clara®

stormwaterRx®
www.stormwaterx.com

CLARA PLUG FLOW SEPARATOR
O&M GUIDELINES
INSPECTIONS AND MAINTENANCE

DATE: 08/24/10 | SCALE: N.T.S. | FILE NAME: Clara Maintenance Guidelines | DRAWN: DJ | CHECKED:

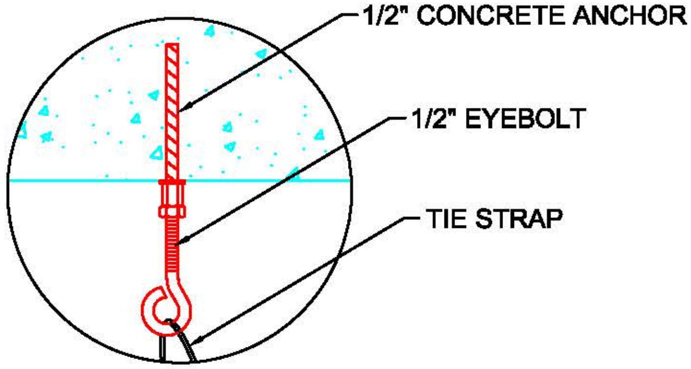
DATE

REVISIONS

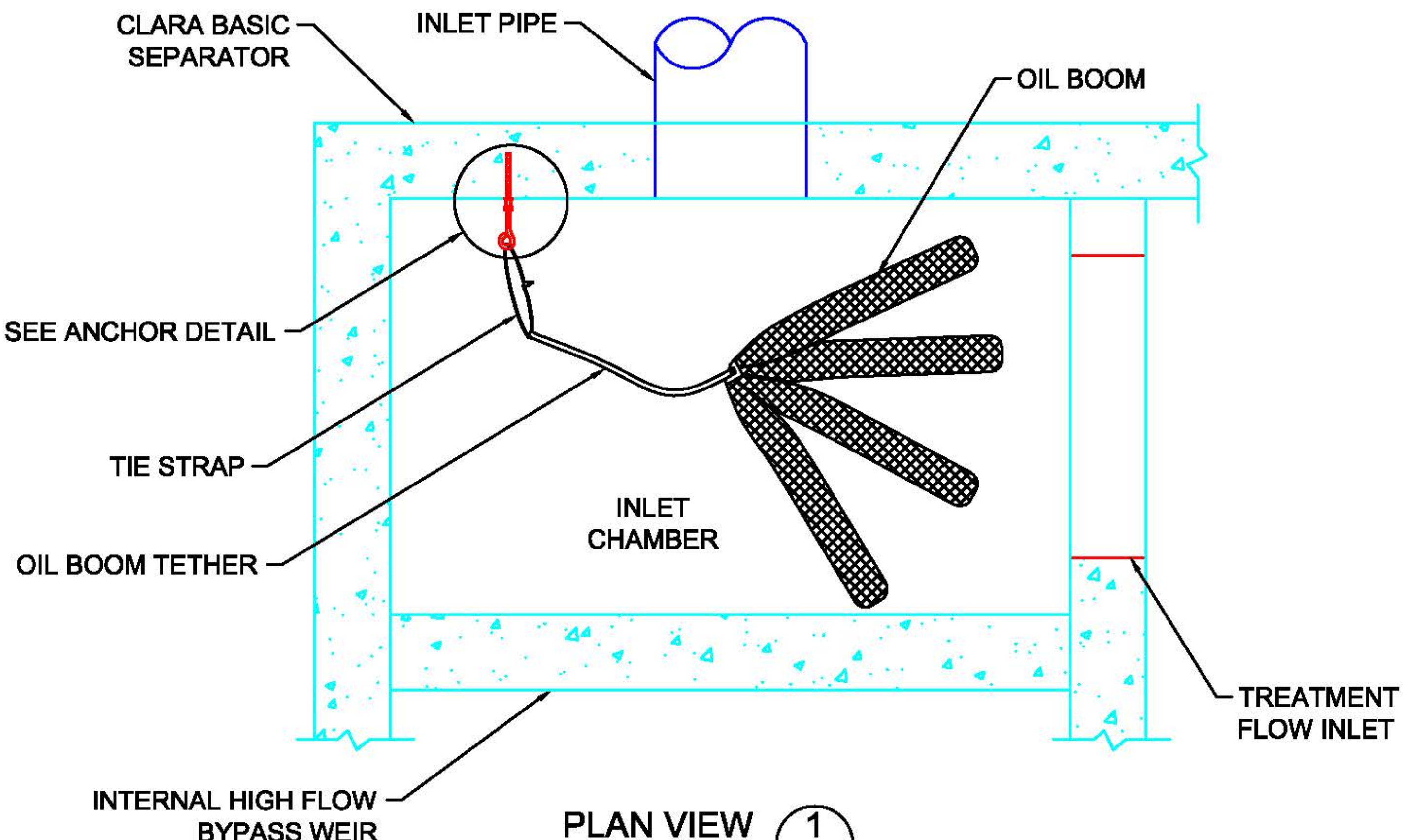
SHEET
1
1 OF 1

INSTALLATION NOTES

1. OIL BOOM TO BE INSTALLED IN INLET CHAMBER OF CLARA® BASIC SEPARATOR SYSTEM BY STORMWATERX LLC - PORTLAND, OREGON - 800.680.3543 (U.S. PATENT NO. 7,892,425).
2. TO INSTALL OIL BOOM IN EXISTING CLARA SYSTEMS:
   A. INSTALL 1/2" CONCRETE ANCHOR INTO UPSTREAM END OF INLET CHAMBER; VERTICAL LOCATION TO BE GREATER THAN OR EQUAL TO NORMAL INFLUENT LEVELS.
   B. SECURE 1/2" EYEBOLT TO CONCRETE ANCHOR.
   C. ATTACH TIE STRAP TO OIL BOOM TETHER AND THROUGH EYEBOLT.
3. REPLACE OIL BOOMS AS NECESSARY, WHEN THE POLYMERS ARE DEPLETED IN THE BOOM.



ANCHOR DETAIL



PLAN VIEW 1/1

stormwateRx® www.stormwaterx.com	CLARA® BASIC SEPARATOR OIL BOOM INSTALLATION DETAIL				SHEET 1
DATE: 5/4/2012	SCALE: NONE	FILE NAME: SRX-OILBOOM-DTL	DRAWN: MJW	CHECKED: GRH	1 OF 1

retenu®

Stormwater Filtration System
Operation & Maintenance Manual

stormwateRx®
Reclaiming the world's water.®
122 Southeast 27th Avenue
Portland, OR 97214
www.stormwaterx.com
(800) 680-3543

Ver5

Installed Retenu®
Project Specifications

stormwateRx®
Reclaiming the world's water.®

Project Name: ______________________

Project Address: ______________________

StormwateRx Project No: ______________________

In Operation Date: ______________________

System Model and Type: ______________________

Treatment Flow: ____________ gpm **Backwash Flow:** ____________ gpm

Pump Design Pressure: ____________ psi

Effluent Block Valve: ☐ Yes ☐ No

Influent Tank: ☐ Yes ☐ No

Backwash Tank: ☐ Yes ☐ No

Pump: ☐ Yes **Location of Pump:** ______________________

☐ No

Mfg. & Model #: ______________________

Control Panel: ☐ Yes ☐ No

Mfg. & Model #: ______________________

Notes:

Table of Contents

Important!

The underdrain gravel must be thoroughly washed prior to loading into the Retenu. Failure to wash the gravel could lead to compromised performance and plugging in the well-screen underdrain.

The filtration media must also be washed prior to using the system for treatment. The backwash restrictor valve should also be calibrated at this time. See Section 3.2.

Do not tamper with the specified settings inside the Retenu controller. This may cause failure in the automated backwash feature and permanently damage the filtration media and/or Retenu pump. See Section 4.2 for Recommended Initial Settings.

Do not neglect upstream source control and stormwater management once Retenu is installed. This may result in the premature fouling of the Retenu's filtration and pollutant reduction capacity, shortening the media bed life.

Do not flush spills or otherwise use Retenu to capture pollutants from stormwater drain line jetting or pavement washing.

1 Introduction and System Description

The Retenu® Stormwater Filtration System is a media filter designed to remove suspended solids from industrial stormwater efficiently and economically. The Retenu features an automatic backwashing system for continuous operation with minimal user involvement. When acting as pretreatment to downstream treatment systems, the Retenu greatly increases the life expectancy of these downstream systems.

Filtration occurs from top to bottom within the pressurized system. Water moves through the three-way valves at the top of the pressure vessels, into the pressure vessels and across the deflector assemblies for even distribution into the filter media bed. The water is cleaned by the filter media bed and collected by the underdrain at the base of each vessel. Water is discharged from the plumbing at the base of the Retenu.

The automatic backwash feature is triggered by an increase in pressure drop across the filter media bed inside of the Retenu pressure vessels. The system is designed to automatically backwash when the pressure drop across the media is 12 psi. The water used to do the backwash is the same water that is being treated during stormwater treatment. This influent source of stormwater is first filtered within two of the pressure vessels and then used to backwash the other pressure vessel.

Backwash is accomplished using a three-way valve at the top of the system that cuts off the influent stormwater and creates a passage from the inside of the pressure vessel to the backwash discharge line. Pressure at the base of the system pushes water up through a single vessel lifting and expanding the media, allowing it to release the collected contaminants out the backwash discharge line.

Figure 1. Retenu Components

1.1 Retenu Features

(1) **Inlet Tank:** The influent source for the Retenu providing sufficient treatment volume for proper system operation and backwash capabilities. This is an above-ground tank or a below-ground tank. Several configurations are available.

(2) **Pump:** The pump used to draw water out of the **inlet tank** and generate the necessary pressure and flow rate to operate the Retenu filter. An **end-suction pump** is used for an above-ground tank, and a **self-priming pump** is used for a below-ground tank.

(3) **Media Filter Vessels:** The automated filtration device consisting of a minimum of three separate pressure vessels, each containing an inert filter media bed. A **three-way valve** at the top of each pressure vessel allows for the flow direction to be reversed during backwash. A **backwash restrictor valve** is used to regulate the flow out of the system during backwash.

(4) **Controller:** The automatic controls for the Retenu as well as the manual override features. **Solenoid valves** on the outside of the controller manipulate each of the three-way valves. One solenoid is provided for each valve.

(5) **Backwash Tank:** The collection tank for the contaminants and water generated by the backwash. Solid contaminates will fall out of suspension and be collected at the base of the backwash tank. The backwash tank drains down into the inlet tank once all of the water within the inlet tank has been emptied. An overflow at the top of the backwash tank is also provided.

The influent tank, backwash tank, and/or the effluent block valve may not be necessary for all Retenu systems. Please refer to the “Installed Retenu Project Specifications” sheet at the beginning of this manual for more details of the system installed at your site.

Table 1: Retenu Model Descriptions

System Size	Filter Media	Influent Tank	Backwash Tank
05	E: Enhanced	D: Below-ground detention	T: Above-ground detention
10	I: Inert	T: Above-ground detention	X: No detention included
15		X: No detention included	
20			
40			
50			
Example: Model 20ITT			

2 Installation

The Retenu components must be installed on a level surface that will support the equipment. It is recommended that a 1/4" tolerance be the maximum allowed out of level condition. A concrete base with grouting and/or shims under the structural members is generally the best method to obtain the levelness required. A minimum of 48" service walkway should be maintained in front of the filter vessels to allow for media loading and system servicing.

The backwash line is installed with a backwash restrictor valve to set the appropriate backwash flow. Any additional restrictions within the line may cause inadequate flow and result in poor media cleaning. The backwash line plumbing should be sized to allow adequate flow. See Table 2 to select the necessary pipe size. When installing a backwash line with greater than 100 linear feet, the next pipe size up from the sizes listed in Table 2 should be used.

Table 2. Backwash Line Plumbing Minimum Sizing

Retenu Model #	Backwash Flow (per filter)	Minimum Pipe Size
Retenu 05	26 gpm	1 1/2"
Retenu 10	47 gpm	2"
Retenu 15	75 gpm	2 1/2"
Retenu 20	107 gpm	3"
Retenu 40	189 gpm	4"
Retenu 50	189 gpm	4"

RESTRICTIONS WITHIN THE BACKWASH LINE WILL HAVE AN ADVERSE EFFECT ON THE OVERALL BACKWASHING CAPABILITY (SEE SECTION 2)

3 Start Up Procedures

Several steps must be completed prior to using the Retenu system for stormwater treatment. Damage to the system and/or poor system operation can result if the procedures from Section 3 are not followed. The steps to prepare the Retenu for online operation are:

1. Rinse underdrain gravel (see Section 3.1)
2. Install gravel
3. Install filtration media
4. Calibrate the backwash restrictor valve (see Section 3.2)
5. Backwash new filtration media (see Section 3.2)

3.1 Gravel Rinsing

It is necessary to clean the gravel prior to operating the Retenu system. Even though the gravel supplied is rinsed, a certain amount of fine particulates are generated in shipment.

The underdrain gravel should be rinsed outside the Retenu vessels prior to installation. Rinsing should be done within the original packaging or within a five gallon bucket. Small holes should be put around the sides of the packaging or bucket near the base, and then water should be poured over the top of the gravel. The gravel should be cleaned until the rinse water becomes clear.

3.2 Initial Backwash and Backwash Valve Calibration

The Retenu should be backwashed prior to using the system for regular treatment. At the start of this initial backwash, the backwash restrictor valve should be calibrated. The initial backwash also helps to remove the fine particulates contained in the new media. Please review all of Section 3.2 and 4 prior to conducting a backwash.

THE RETENU SHOULD BE MANUALLY BACKWASHED PRIOR TO AUTOMATING THE RETENU PUMP FOR REGULAR TREATMENT

The backwash restrictor valve at the top of the Retenu system is pre-set at half-way open when installed. The optimal setting of this valve needs to be established during system start-up. Plan to do this prior to leaving the system ON unattended.

The goal of setting the backwash restrictor valve is to have it as open as much as possible without losing media during backwash. To set the backwash restrictor valve, water will have to be available to do a five-to-ten minute backwash (see Installed Project Specifications at the start of this manual for the backwash flow rate). The steps to calibrate the backwash restrictor valve are described below:

1. If installed, remove the protective red plastic cover covering the backwash restrictor valve.
2. Remove the ½" threaded plug from the upstream-most section of the PVC backwash line and install the provided flex hose that connects to this location.
3. Initiate a backwash sequence following the steps outlined in Section 4.2 or 4.3. Review all of Section 4 prior to conducting a backwash.
4. After approximately 30 – 60 seconds of backwash, collect a sample of the backwash water from the flex hose using a 5 gallon bucket or similarly sized container.

   You may choose to instead use the sight glass installed at the top of the system to inspect the backwash water for the presence of sand.
5. Inspect the backwash water sample for the presence of sand.

6. If no sand is visible in the sight glass or in the 5 gallon bucket, open the backwash restrictor valve one-half turn. Continue to open the backwash restrictor valve in one-half turn increments until sand is visible in the sight glass or in the 5 gallon bucket sample. Wait approximately 30 seconds after making each adjustment to make an observation. Once sand is visible, close the backwash restrictor valve one-half turn.

   If sand is visible in the sight glass (it looks like small air bubbles) or in the 5 gallon bucket, close the backwash restrictor valve one-half turn. Continue to close the backwash restrictor valve one-half turn until no sand visible in the sight glass or in the 5 gallon bucket sample. Wait approximately 30 seconds after making each adjustment to make an observation. Once sand is no longer visible, the valve is set to the correct setting.
7. Stop the backwash sequence.
8. Reinstall the ½" threaded PVC plug to its original location, and reinstall the protective red plastic cover and pad lock (if supplied).

ALL OF SECTION 3.2 AND 4 SHOULD BE REVIEWED PRIOR TO INITIATING A BACKWASH

After calibrating the backwash restrictor valve, a complete backwash sequence should be completed following the steps in Section 4.2 or 4.3. Using the sight glass at the top of the backwash line, backwash each filter vessel until the turbidity of the water in the sight glass clears up.

4 Retenu Operations

The Retenu has two separate modes of operation. With both of these modes of operation, stormwater is being pulled from the influent source at the "stormwater treatment flow rate." The two modes of operation are described below.

Treatment: The entire treatment flow rate is being treated and discharged from the Retenu outlet. The three-way valves at the top of each vessel are open to influent water and all vessels are being used simultaneously to treat the stormwater.

Backwash: Influent stormwater is used to backwash the system one vessel at a time. The three-way valve located at the top of the vessel being backwashed closes off flow from the influent source. Water from the influent source is forced downwards through the other vessels, cleaning the water. This water is then forced upwards through the vessel being backwashed and out the three-way valve to the backwash discharge line.

A backwash sequence may be initiated in a variety of ways. Please review all of Section 4 before operating the Retenu.

4.1 Automatic Backwashing

The filter media should be backwashed on a routine basis. The frequency of backwashing is correlated to the amount of solids loading on the media. Solids loading causes a pressure drop (or friction losses) across the filter which is measured by the differential pressure switch on the bottom of the Retenu controller. With the proper controller settings (see Section 4.2), the Retenu automatically backwashes when the set pressure differential is reached.

4.2 Recommended Initial Settings

The automatic backwash feature is controlled by the Retenu controller (Figure 2). The recommended settings on the Retenu controller should not vary much from site to site, but they can be adjusted if necessary to improve the efficiency of the backwash (see Section 6). The recommended settings for the system start-up are described below.

THE MANUAL OVERRIDE SCREWS ON EACH THE SOLENOID VALVES SHOULD BE IN THE *OFF* POSITION FOR AUTOMATIC BACKWASHING

Recommended Initial Settings

Solenoid Valves: Turn the manual override screws on each of the solenoid valves (Figure 3) counter-clockwise to OFF.

Periodic Flush: The periodic flush should be set to OFF which will engage the pressure differential setting for automatic backwashing (Figure 2).

Pressure Differential: The pressure differential switch is factory set to 12 psi (Figure 4). When the pressure drop across the filter media bed reaches this differential pressure, an automatic backwash sequence will commence.

Flush Duration: During start-up and initial operation, the backwash duration should be set to 4 minutes. The minimum backwash duration should be 4 minutes for all applications. See Section 4.4 for more details.

Delay: For air actuated valves, the delay setting should be 0 seconds. See Section 4.5 for more details on hydraulic and air actuated valves.

For hydraulic actuated valves, the delay setting should be 20 seconds. The delay setting should be kept at 20 seconds to allow sufficient time for the three-way valves to open and close as necessary.

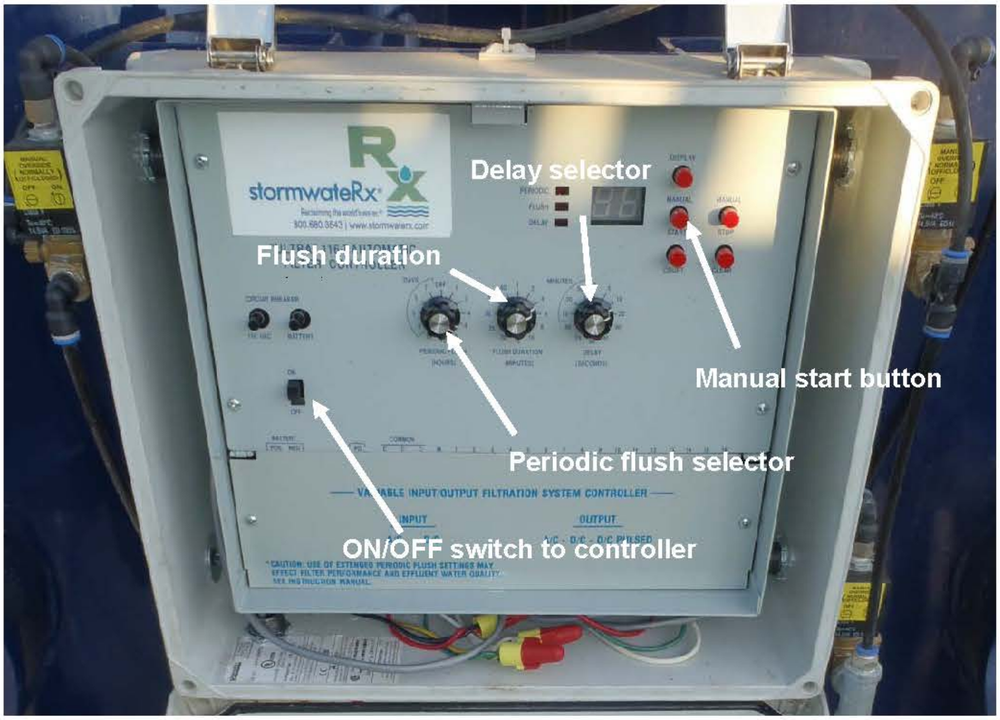


Figure 2. The Retenu controller

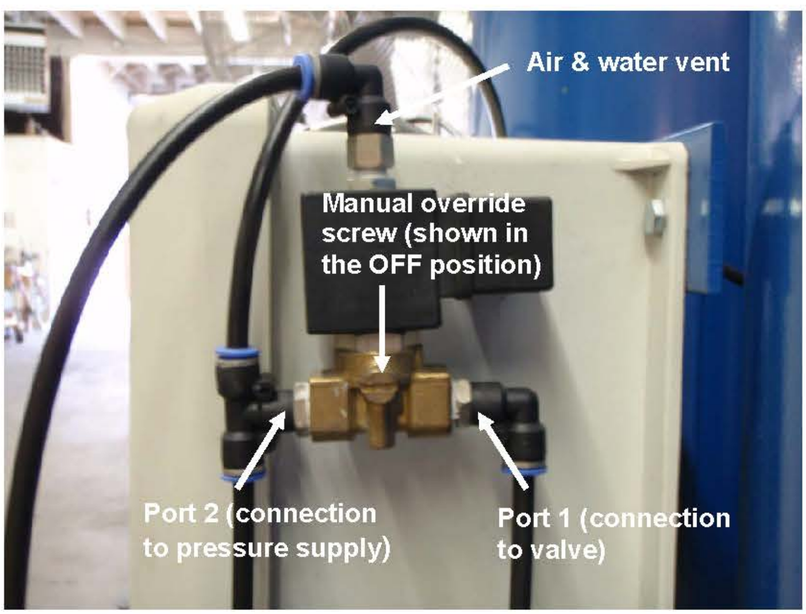


Figure 3. Solenoid valve

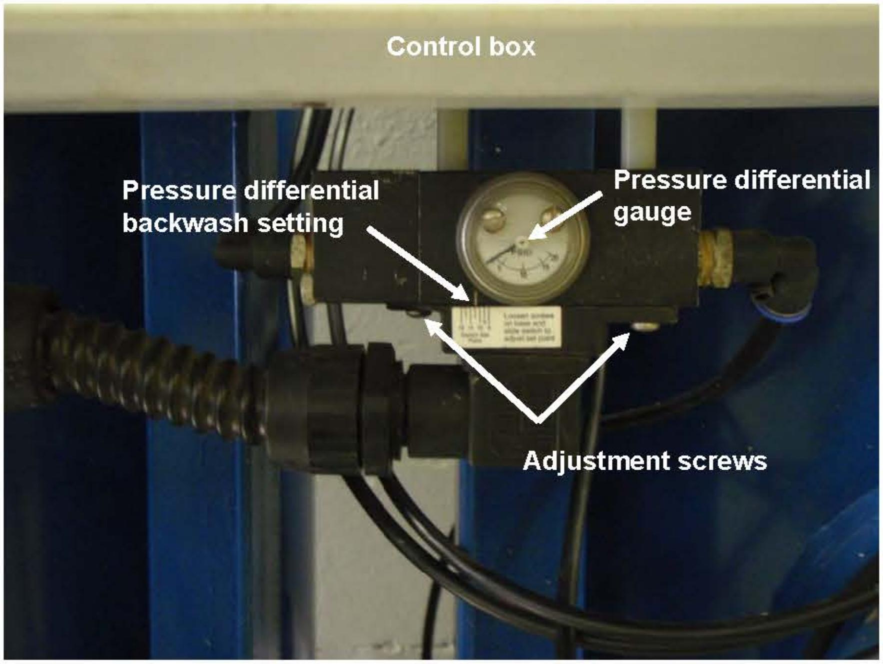


Figure 4. Differential pressure switch

4.3 Manual Backwash using the Controller Settings

Using Retenu controller, a backwash sequence can be initiated so that all of the filter vessels are sequentially backwashed. The system is forced into backwash by pressing and holding the "manual start" button inside of the controller until the "flush" indicator lights up on the displays (Figure 2). By doing this, all three vessels will be sequentially backwashed. The "treatment" mode of operation will resume following the backwash sequence. The backwash settings selected at the start of the backwash sequence will be used for this operation (see Section 4.2).

4.4 Manual Backwash using the Solenoid Valves

The solenoid valves mounted on the sides of the controller are used to open and close the three-way valves used for backwashing. These valves are controlled electronically by the Retenu controller, however, these solenoid valves can also be mechanically controlled in order to backwash the system.

The "manual override screw" on the side of each solenoid controls an individual three-way valve. The three-way valves located on top of the Retenu are used to redirect the direction of flow and allow the system to be backwashed. If the "manual override screw" is in the OFF position, a plunger within the solenoid closes preventing water/air pressure from passing through the solenoid. This allows the three-way valve to stay open. In the ON position, this plunger opens allowing water/air pressure to pass through the solenoid. This closes the three-way valve via pressure in the black pressure lines.

The Retenu can be backwashed completely by adjusting the “manual override screws” on the solenoid valves. Manual backwashing should be done only after the entire system is filled with water and the pump is operating. The steps to manually backwash the system by adjusting the solenoid valves are:

1. Determine if your system has an effluent block valve. If solenoid #4 is present, you have an effluent block valve and this is the solenoid used to control your effluent block valve (Figure 5).
2. Turn the manual override screw on solenoid #1 *clockwise* to ON (Figure 3, 5). Make sure that the manual override screw on all other solenoid valves are turned to OFF.
3. For Retenu systems with an effluent block valve, turn the manual override screw on solenoid #4 *clockwise* to ON.
4. Backwash should be initiated by Steps 2 (and 3). Continue backwashing until water in the sight glass at the top of the Retenu appears clean or is unchanging for 30 seconds.
5. For systems with an effluent block valve, terminate the backwash by turning all manual override screws *counter-clockwise* to OFF.

   For systems without an effluent block valve, terminate the backwash by turning the one manual override screw *counter-clockwise* to OFF.
6. Continue to operate the system without backwashing for approximately 30 seconds.
7. Repeat Steps 2 – 6 for all remaining filter vessels one at a time by replacing “solenoids #2” and “solenoid #3” for “solenoid #1” in Step 2.

MANUAL BACKWASHING CAN ONLY BE DONE IF THE ENTIRE SYSEM IS FILLED WITH WATER AND THE PUMP IS OPERATING

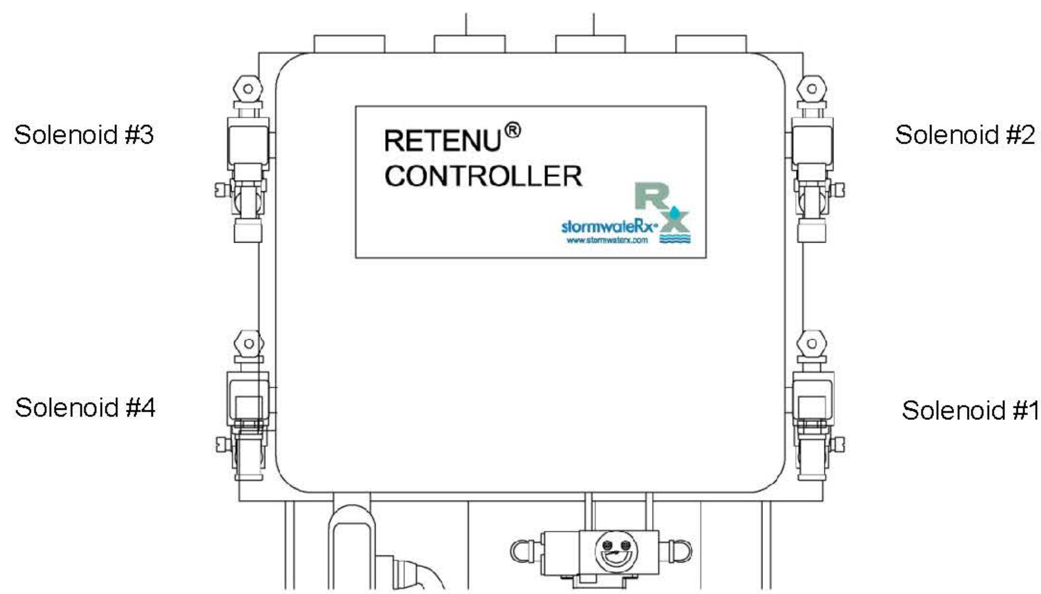


Figure 5. Solenoid valve naming, solenoids 1 operates the three-way valve on top of the left-most pressure vessel, solenoid 2 operates the middle valve, solenoid 3 operates the right-most valve, solenoid 4 controls the effluent block valve (if equipped)

4.5 Hydraulic and Air Actuated Valves

The three-way valves are the valves that allow the system to be backwashed. Pressure in the black pressure lines causes the movement of these valves. This pressure can be provided either hydraulically or pneumatically. The solenoids on the Retenu controller regulate the passage of this pressure.

Hydraulically actuated valves are powered from the pressure in the plumbing at the top of the Retenu. Air actuated valves must have an external source of pressurized air. Often a nitrogen cylinder and a regulator valve are used. Please refer to your Installed Retenu Project Specifications at the front of this manual for more on your system.

With air actuated valve, the pressure powering the valves should be between 50 – 70 psi.

4.6 Backwash Duration and Frequency

Backwashing should be done to the greatest extent necessary. The sight glass at the top of the Retenu can be used to view the water clarity of the backwash water. Turbidity in the backwash water indicates that solids are being removed. Each vessel should be backwashed until the water within the sight glass clears up and does not improve over 30 seconds. The standard setting for flush duration is 4 minutes.

If the Retenu is backwashing too frequently, the system may need maintenance (Section 5), the backwash restrictor valve may need to be readjusted (Section 3.2), or the backwash line may have too many restrictions in it (Section 2).

In addition to routine backwashing, it is recommended that the Retenu be backwashed at the beginning and end of long periods of rain regardless of pressure differential across the filter media bed.

5 Retenu Controller

As described in Section 4 the Retenu controller is necessary for the automatic backwash function. The solenoid valves on the side of the controller can be manipulated to initiate the backwashing of individual vessels. Please refer to Section 4 for more details.

The details on the controller wiring and the controller operation are described in the section below.

5.1 Controller Electrical Information

Power Supply

AC Power:	Input:	120 VAC or optional 240 VAC, 50 or 60 Hz
	Output:	Selectable 24 VAC or 12 VDC (continuous or pulse operation), 3 amps maximum output current
DC Power:	Input:	12 VDC
	Output:	12 VDC (either continuous or pulse operation)
	Power:	20 milliamps, 46 milliamps with display button depressed

Electrical Installation

Connect the wires from a 110 VAC power source to the controller using the following instructions.

1. Screw a ½" condulet (customer supplied) to the threaded transformer nipple at the bottom of the enclosure feeding the transformer leads into the condulet.
2. Install and secure a rigid conduit or armored cable as may be required by local electrical codes to the condulet routing wires from the 110VAC source into the condulet.
3. Connect one wire from the power source to the black transformer lead and the other to the white transformer lead using approved wire nuts.
4. To ground the controller, connect the green transformer lead to a grounding wire. Grounding can also be achieved by securing a metal conduit to the ½" condulet or by loosening the green screw at the bottom of the case, placing a grounding wire between the head of the screw and the case, and then re-tightening the screw.

The solenoid valves and the pressure differential (PD) switch on the Retenu controller are factory-wired. If needing to restore the valves and PD switch to factory setting, the following instructions should be followed.

1. Route the wires from the solenoid valves through the largest opening in the bottom of the controller. One wire is routed from each valve to the corresponding numbered station (filter vessel) terminal. One common wire is connected in parallel with each valve and to the "common" terminal.
2. If the master valve is used, connect one wire to the terminal marked "M" and the other to the "common" terminal.
3. Connect the wires from the pressure differential (PD) switch to the terminals marked "PD" with the black wire connecting to the left terminal "P" and the white wire connecting to the right terminal "D".

5.2 Controller Operations

The function of each of the individual knobs and buttons on the Retenu controller are described below. Please see Section 4.2 for the recommended Retenu controller settings.

Table 3. Retenu Controller Controls

Control Name	Type	Function
On/Off Switch	Switch	Provides power to the controller. This will reset the backwash count record.
Display	Button	Activates the LED lights on the controller displaying the system's current mode of operation.
Manual Start	Button	Initiates a backwash sequence by pressing and holding the button. Pressing and holding the button again will advance the system one step further into the backwash sequence.
Manual Stop	Button	Stops the backwash sequence by pressing and holding the button.
Count	Button	Displays the number of backwash sequences since the controller was turned on or since the last count record was reset.
Clear	Button	Resets the backwash count record by pressing and holding the button.
Periodic Mode	LED	Displays if the Retenu is in its "treatment" mode of operation and the Display Button is depressed (see Section 4).
Flush Mode	LED	Displays if the Retenu is in its "backwash" mode of operation and the Display Button is depressed (see Section 4).
Delay Mode	LED	Displays if the backwash of a filter vessel has just completed and the Display Button is depressed.
Periodic Flush	Knob	Sets the period between backwashing sequences (in hours). If the knob is set to OFF, the automatic backwashing function will be based upon the pressure differential setting.
Flush Duration	Knob	Sets the backwash duration for each filter vessel (in minutes).
Delay	Knob	Sets the period between backwashes (in seconds).

6 System Maintenance

Under heavy loading conditions, the Retenu may require occasional media maintenance. The inlet and backwash tanks will also need to be emptied and rid of the accumulated solids. The type and frequency of maintenance varies from site to site due to differences in facility operations, upstream stormwater management, and rainfall frequency.

6.1 Inlet and Backwash Tank Maintenance

Maintenance Description

Contaminants flushed from the Retenu filter during backwashing will accumulate in the inlet and backwash tank and must be removed and disposed of. If these solids are not removed when necessary, the backwash cycle will increase and reduce the treatment capacity of your system.

Maintenance Timing/Frequency

This should be done once a year at a minimum or when no greater than 24 inches of solids have accumulated in the base of the tank. The rate of solids accumulation within the backwash tank varies. The amount of solids accumulation should be monitored quarterly to determine the frequency of maintenance.

Maintenance Steps

Using the manway at the top of the inlet and backwash tanks, vactor out the solids and remaining liquid in the base of each tank.

6.2 Partial Maintenance

Maintenance Description

A partial maintenance involves removing the top 1 - 6" of media from the top of the filter bed. This may be necessary when too many solids have accumulated within the top layer of media preventing backwashing from being possible.

HEAVY SOLIDS LOADING AND/OR TAMPERING WITH THE RETENU CONTROLLER SETTINGS WILL CAUSE THE RETENU MEDIA SURFACE TO PLUG. THIS WILL INHIBIT THE BACKWASHING CAPABILITIES AND PARTIAL MAINTENANCE WILL BE NECESSARY.

Maintenance Timing/Frequency

This should be the first step to restore the backwashing capabilities once they are rendered ineffective by embedded solids. The automatic backwash will occur frequently or continuously as a result of a spent media bed. Insufficient backwash flow or duration may be another cause of this.

Maintenance Steps
The steps for a partial media maintenance are:

1. Remove the covers from the top of the Retenu.
2. Use a flash light to observe the appearance and media level inside of the filter vessel.
3. Using a hand shovel or wet/dry vacuum, carefully remove the top 1 – 6" of media from the top of the media bed. The amount of media removed should depend on the density of media/solids in the top layer. Remove the dense "dirty" media until the "clean" loose media is reached below.
4. Close the cover on the top of the Retenu.
5. Repeat Steps 1 – 4 for all other vessels.

The removed filtration media should be replenished if 6 or more inches of media have been removed during partial maintenances.

After conducting a partial media maintenance, if backwashing does not restore the typical pressure drop across the media bed, then a full maintenance is recommended (see Section 5.3).

6.3 Full Maintenance

Maintenance Description
A full maintenance consists of replacing all of the filtration media within each of the vessels once backwashing and a partial maintenance are no longer capable of restoring the typical pressure drop across the media. At this point, solids are embedded in the media and the media needs replacing. The underdrain gravel at the base of the vessels may NOT need to be replaced with every full maintenance.

Maintenance Timing/Frequency
This should be done when a partial maintenance has been recently conducted and the automatic backwash occurs frequently or continuously.

Maintenance Steps
The steps to replace the filtration media in the Retenu are below:

1. Remove the covers on the top of the Retenu.
2. Insert a stinger from a vactor truck through the opening on top.
3. Make record of the depth of the stinger inside the vessel before beginning to vacuuming out the filtration media.
4. Vacuum out approximately 25" of the filtration media. Do not vacuum out media below the base of the manway on the side of the filter vessel. The underdrain gravel is approximately 30" below the original filtration media depth. Media level indicators on the side of the Retenu can be used to assist you.
5. Remove the manway cover and proceed vacuuming out the media until you reach the underdrain gravel at the base of the vessel. The underdrain gravel should be located approximately 2" below the base of the manway.
6. Wipe down walls within the vessel.

7. Remove the remainder of the filtration media (by hand or we/dry vaccuum) and inspect the gravel at the base of the vessel. The gravel should be relatively clean (no coating or a very light coating of dirt on the gravel). If the gravel is clean, skip Steps 8 – 12.

MOST OFTEN THE GRAVEL AT THE BASE OF THE VESSELS WILL NOT NEED TO BE REPLACED. DO NOT VACTOR OUT GRAVEL PRIOR TO INSPECTION

8. If the gravel contains medium to large chunks of dirt/debris, remove the gravel.
9. Hose down the inside of the vessel and thoroughly spray a jet of water over the well-screen underdrain system.
10. Vactor out water from the base of the vessel.
11. Repeat cleaning the well-screen underdrain with a jet of water.
12. Rinse new gravel outside of the vessel prior to installing it (Section 3.1).
13. Install rinsed gravel by packing it around the underdrain system and then making it level within the vessel.
14. Remove all foreign material from the sealing surfaces of the manway.
15. Close the manway.
16. Install the filtration media.
17. Fill the vessel with water to soak the media prior to backwashing (Section 3.2).
18. Close the cover on the top of the Retenu.
19. Repeat steps for the other remaining vessels.

INSTALLERS SHOULD WEAR APPROPRIATE DUST MASKS WHEN WORKING NEAR THE VESSEL DURING MEDIA INSTALLATION

6.4 Pump Maintenance

See the pump O&M manual at the back of the manual for the installation and maintenance of the Retenu pump.

7 Operating Troubleshooting Guide

The table below provides a quick reference to address specific issues confronted with the operation of the Retenu. Sections 3 and 4 should be reviewed to reduce the onset of these issues.

Table 4. Retenu Troubleshooting

Symptom	Probable Cause	Recommended Action
Poor filtration	High pressure differential forcing contaminants through the media	More frequent backwashing
	Low filter media allowing contaminants to pass through	Remove covers and remove top 3” of media. Replace covers and flush tanks for short intervals until clean. Addition of media to the correct level
Not backwashing	Filter media plugged preventing sufficient water for backwash	Remove covers and remove top 1 - 6” of media (Section 6.2). Replace covers and flush tanks for short intervals until clean.
	Retenu controller setting are not set correctly	Reset the Retenu controller settings to recommended initial settings (Section 4.2)
	Pressure line connected to the three-way valves is plugged	Remove and clean the pressure lines and Y-strainer at the top of the Retenu. Consider using air actuated valves (Section 4.5).
	Insufficient backwash flow	Too many restrictions on the backwash line (Section 2). Or the backwash restrictor valve needs adjusting (Section 3.2).
Constant high pressure differential across the vessels	Filter media level is low causing inadequate backwash	Addition of media to the correct level
	Filter media plugged preventing sufficient water for backwash	Remove covers and remove top 1 - 6” of media (Section 6.2). Replace covers and flush tanks for short intervals until clean.
	Insufficient backwash flow	Too many restrictions on the backwash line (Section 2). Or the backwash restrictor valve needs adjusting (Section 3.2).
Unexpected loss of filtration media	Filtration media is being lost during backwash	The backwash restrictor valve needs adjusting (Section 3.2)

Effluent block valve not closing (if equipped)	Obstruction in the valve seat area	Clean inside of valve to remove obstruction Remove and clean the pressure lines and Y-strainer at the top of the Retenu. Consider using air actuated valves (Section 4.5)
Shaking in discharge line or at the pump	Insufficient pressure in discharge line Backwash line causing vacuum	Create more of a restriction in the effluent discharge line by partially closing the discharge line ball valve Install a vacuum breaker on the backwash manifold
Frequency of backwashing increasing	Improper backwash duration Improper backwash flow rate Low filter media level Dirtier water	Increase backwash duration (Section 4.4) The backwash line is too small in diameter for the run of pipe (Section 2) The backwash restrictor valve needs adjusting (Section 3.2) Addition of media to the correct level The backwash tank may need to be maintained (Section 6.1)

Trademarks and Disclaimers

StormwateRx LLC
122 Southeast 27th Avenue
Portland, Oregon, 97214
(800) 680 - 3543

Retenu®
Inspection Report

Project Name: ______________________________

Inspected By: ____________ **Date:** ____________ **Current Conditions:** ____________

Complete this report after conducting an inspection and record the date in the Inspection & Maintenance Log. Refer to Sections 4 and 5 of the Operation and Maintenance Manual for additional details.

Pump Operating Pressure:

Pump Design Pressure[1]: __________ psi

Current Operating Pressure[2]: __________ psi

Accumulation of Solids:

Backwash Tank: __________ inches

Inlet Tank: __________ inches

Retenu Pressure Vessels:

Upstream pressure (P_1): __________ psi

Downstream pressure (P_2): __________ psi

ΔP Retenu Pres. Vessels[3]: __________ psi (ΔP Retenu = $P_1 - P_2$)

Notes: ______________________________

"Clean Media" Pressure Differential:

To be recorded immediately after the completion of a backwash sequence

Upstream pressure (P_1): __________ psi

Downstream pressure (P_2): __________ psi

ΔP Retenu Pres. Vessels[4]: __________ psi (ΔP Retenu = $P_1 - P_2$)

Notes: ______________________________

General Notes:

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[1] Refer to the Retenu Installed Project Specifications at the front of your O&M manual.

[2] The flow control valve must be recalibrated if the Retenu pump operating pressure is not within ± 3 psi of the Pump Design Pressure when Retenu is in its filtration mode of operation (opposed to the backwash mode of operation).

[3] The automated backwash sequence should initiate with a differential pressure of 12 psi.

[4] A backwash sequence should restore the pressure drop through the system to be 0 – 4 psi. See the Section 6 of the O&M manual for trouble shooting.

Retenu®
Maintenance Report

Project Name: ______________________________

Maintained By: ________________ **Date:** ______________

Complete this report after conducting maintenance on the Purus. Record the date in the StormwateRx Maintenance Log. Refer to Sections 4 and 5 of the Operation and Maintenance Manual for additional details.

Manual Backwash:

Manual backwash conducted: ☐Yes ☐No ☐Not Needed

Notes:

Backwash Tank:

Solids accumulated at the bottom of tank removed: ☐Yes ☐No ☐Not Needed

Notes:

Inlet Tank:

Solids accumulated at the bottom of tank removed: ☐Yes ☐No ☐Not Needed

Notes:

Filtration Media Replacement or Removal:

The top 3" of media removed (partial maintenance): ☐Yes ☐No ☐Not Needed

Notes:

All media except gravel replaced (full maintenance): ☐Yes ☐No ☐Not Needed

Notes:

General Notes:

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aquip®

Stormwater Filtration System
Operation & Maintenance Manual

stormwateRx®
Reclaiming the world's water.®

122 Southeast 27th Avenue
Portland, OR 97214

www.stormwaterx.com
(800) 680-3543

Ver14

Table of Contents

Important!

Do not neglect upstream source control and stormwater management once Aquip is installed. This may result in the premature fouling of the Aquip filtration and pollutant reduction capacity, shortening bed life.

Do not flush spills or otherwise use Aquip to capture pollutants from stormwater drain line jetting or pavement washing.

Lifting Aquip once the media has been installed may result in damage to the tank. All the media except the underdrain gravel should be removed before attempting to move Aquip.

Regular maintenance of the media surface will ensure optimal performance results as well as increase the lifespan of the media bed. The removed media needs replacement after removing more than 2”. Media replacement should not be done in the place of seasonal maintenance.

Do not pressure-wash or rinse the inside of the Aquip prior to removing the filtration media.

Stormwater sampling should be done with care. Use new sampling bottles and avoid contaminating samples with dirt from the Aquip sample port or your hands.

Freezing conditions can cause damage to the external plumbing on Aquip. Please refer to this manual to take the necessary precautions.

1 Introduction and System Description

Aquip is a passive adsorptive depth filtration technology designed specifically for reduction of stormwater pollutants such as suspended solids, turbidity, heavy metals, nutrients and organics from industrial sites. Aquip is a patent pending system that uses a pre-treatment chamber followed by a series of inert and adsorptive (depending on the configuration) filtration media to effectively trap pollutants in a pre-configured package. The Aquip structure is typically concrete (C), steel (S) or pre-cast concrete blocks for high flow applications (HF). Pollutant removal within the pre-treatment chamber occurs by gravity settling; pollutant removal within the filtration chamber occurs through a combination of chemical complexing, co-precipitation, adsorption, absorption, micro-sedimentation, filtration and biological degradation.

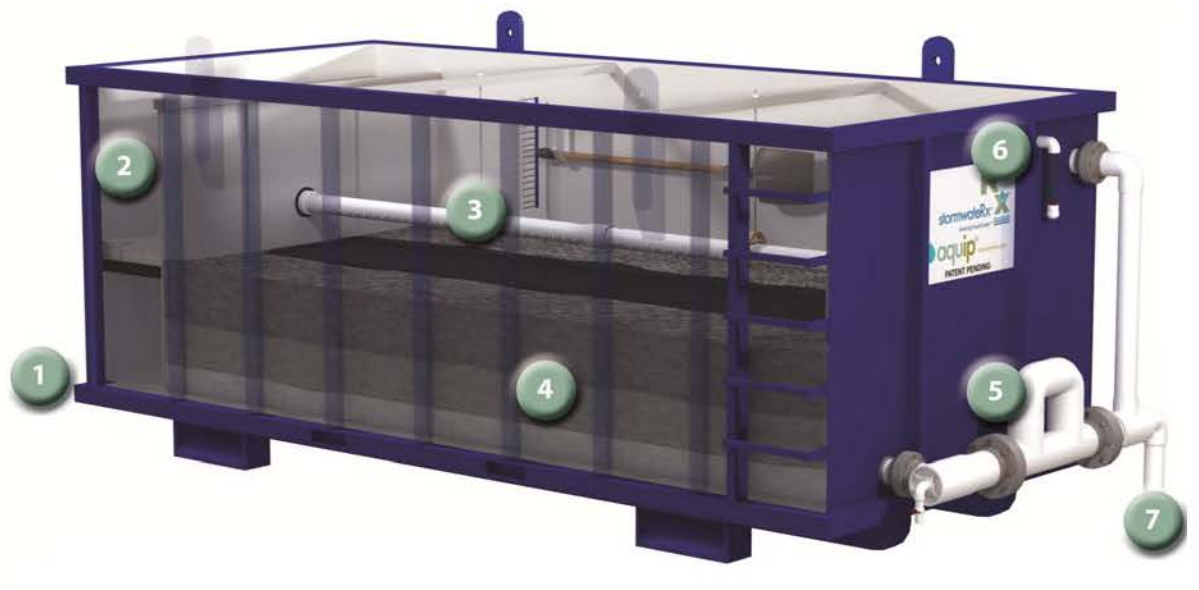

Figure 1: Aquip Stormwater Filtration System

1.1 Aquip Features

(1) **Inlet:** Polluted stormwater flows into the Aquip via the inlet pipe which controls and monitors the flow into the system.
   a. **Inline Flow Meter:** An electromagnetic flow meter displays the operating flow rate and the total volume of water treated by the Aquip. The volume of water treated should be recorded at regular intervals to help in planning maintenance intervals.
   b. **Flow Control Valve:** The valve used to calibrate the proper flow rate into the Aquip.
   c. **Inlet Check Valve:** This check valve keeps the standing water level in the pretreatment chamber at the correct level.
   d. **Inlet Sample Port:** Allows for the convenient sampling of the inlet stormwater.

(2) **Pretreatment:** This chamber is customized to improve the quality of the stormwater prior to treatment in the filtration chamber. The pretreatment chamber can be configured for settling

coarse solids, skimming free floating oil, conditioning the stormwater for dissolved metals removal, or optimizing organics removal, or any combination thereof.

The **buffering** option is the most common configuration. Aquip uses a passive pH buffering process which accelerates the output of alkalinity, an important constituent in natural waters. This buffering works synchronously with several of the adsorptive filtration media layers within the filtration chamber. The buffered water helps positively charged metallic ions find negatively charged alkalinity complexes. Some of these positive and negative ions form insoluble complexes that are then filtered out in the filtration chamber. Within the Aquip filtration treatment chamber some of the metals are removed as precipitates by micro-sedimentation. Because of the low alkalinity common to most stormwater, particularly those from facilities where most of the surface is paved, the pH buffering effect is temporary.

Other options are the basic solid settling configuration or the oil water separator design. All configurations come standard with a precautionary **oil skimmer** that helps to trap and absorb free oil inside of the pretreatment chamber.

(3) **Inlet Distributor:** Water from the pretreatment chamber flows into the inlet distributor and is dispersed along the full length of the filter media bed optimizing the contact area of stormwater with filtration media. The **energy dissipation fabric** lies beneath the distributor to prevent scouring of the media bed.

(4) **Filtration Treatment:** Layers of inert and adsorptive media make up the **media bed** which filters out stormwater pollutants such as metals, particulates, oil, organics and nutrients. Once filtered through the media bed, clean stormwater flows into the **underdrain** located along the bottom of the media bed.

(5) **Outlet Manifold:**
   a. **Outlet Sample Port:** Allows for the convenient sampling of treated stormwater.
   b. **Adjustable Head Control:** Clean stormwater leaving the filter bed passes through the adjustable head control. This device can be adjusted in the field and assures optimal water-filter media contact under a range of operating conditions.

(6) **Emergency Overflow:** The upturned elbow provides a means of bypass for stormwater if the media bed is no longer draining at a rate that keeps pace with the influent design flow rate. A passive **overflow indicator** on the outside of the Aquip tank visually indicates when an emergency overflow of the Aquip has occurred. After each overflow event, this feature needs to be reset by releasing the water stored inside the overflow indicator by turning the petcock valve located at the bottom of the device.

(7) **Outlet:** Clean stormwater is discharged from Aquip through the outlet pipe to an existing conveyance line or to an infiltration gallery or other means of disposal or reuse.

The “Installed Aquip Project Specifications” sheet at the beginning of this manual will provide the details of the system installed at your site. Refer to this document for details on your site-specific Aquip system. A description of the Aquip model numbers are provided in Table 1 below.

Table 1: Aquip Model Descriptions

System Size	Tank Material	Pretreatment Media	Filtration Chamber Media
10	P: Plastic	B: Buffering	E: Enhanced Metals
25	S: Steel	O: Oil Coalescing	I: Inert
50	C: Concrete	X: Settling (no media)	Z: Special
80	U: Owner Supplied		G: Enhanced Organics
110	H: High Flow		
160	G: Green - Infiltrating		
210			
300			
400			
800			
Example: Model 210SBE			

1.2 Typical Installation Configuration

In most applications, the Aquip system is installed as a retrofit and installation is above ground. In this case, stormwater needs to be pumped from a below-ground vault or catch basin to the Aquip. In some cases stormwater is first pumped to an above-ground storage tank and stormwater is drained by gravity through Aquip. A configuration with a storage tank is referred to as “Storage Discharge” (Figure 2). Configurations without a storage tank are called “Direct Discharge” (Figure 3).

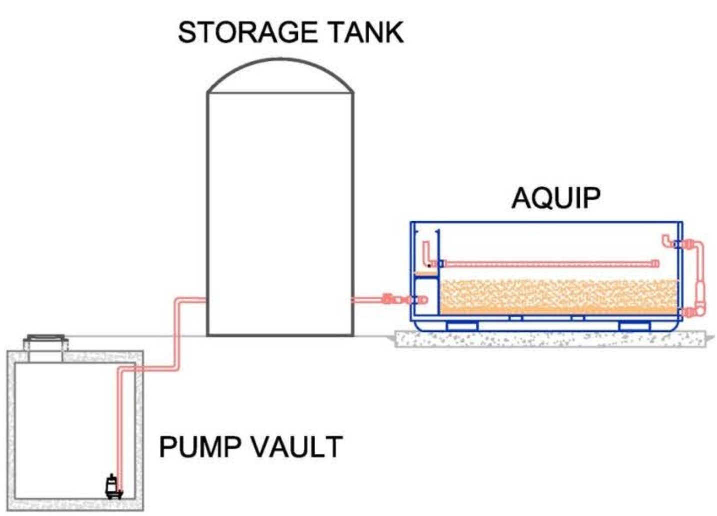

Figure 2. Storage Discharge configuration

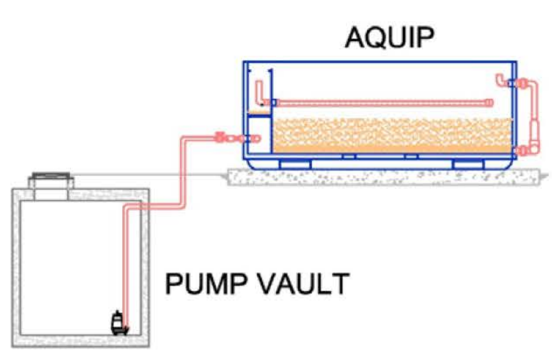

Figure 3. Direct Discharge configuration

2 Aquip Operations

Regular inspection and maintenance is required for the proper operation of the Aquip. Site conditions vary such that the maintenance requirements cannot be prescribed without regular inspections. Inspections determine the type and frequency of maintenance required and regular maintenance keeps the Aquip operating at optimal conditions to improve the performance and media longevity.

2.1 Wet Start-Up Procedures

The Aquip is typically installed during dry weather when there is not sufficient stormwater available to complete the final steps to put the Aquip online. StormwateRx LLC personnel will leave the Inlet Flow Control Valve set to half open until the flow rate to the system can be calibrated. During the first storm event it is imperative that the owner calibrate the flow rate through the system to that designated in the Installed Aquip Project Specification sheet at the front of this manual.

Step 1. **Fill Above Ground Storage Tanks:** For Storage Discharge configurations only. For Direct Discharge, proceed to Step 2. Close the outlet valve from the storage tank (or the Inlet Flow Control Valve to Aquip) and fill the above ground storage tank(s) until the water level is near the top of the tank(s).

Step 2. **Flow Calibration**: Adjust the Inlet Flow Control Valve until the Inline Flow Meter indicates the design/nameplate flow rate as noted on the flow meter (Figure 4). The design flow rate is listed in the Installed Aquip Project Specification sheet at the front of this manual.

Step 3. **Inlet Distributor Adjustment**: Adjust the height of the Inlet Distributor until each arc of water is roughly uniform across the entire length of the Aquip filtration chamber (Figure 4). This is done by tightening or loosening the plastic washers on the threaded rod suspending the Inlet Distributor.

Step 4. **System Operation:** Monitor system throughout the first storm event to confirm stormwater is passing through Aquip. Inspect outfall point of stormwater conveyance line to confirm there is free discharge. Note that the Aquip filter performance improves (outlet water clarity should improve) after the first or second storm event. This occurs because the stormwater particulates that are captured by the Aquip filtration bed in early storm events actually assist the particle filtration process, thereby producing better water clarity with time. This process is known as "bed seasoning."

Step 5. **After Storm Inspection:** Inspect Aquip after the storm event. Normally, owners observe an accumulation of fine solids over the top of the filtration chamber. If the thickness is greater than 1/4-inch, additional upstream source control may be beneficial to reduce sediment loading to the system (see Section 7).

Figure 4. Inlet piping with flow meter (right); Uniform flow out the inlet distributor (left)

2.2 Inspections

During the first rainy season, inspections should be conducted weekly or every two to three storms to establish site-specific inspection and maintenance intervals. Regular inspections will verify that the system is in good operating condition and should be recorded as part of the monthly inspection program and the facility Stormwater Pollution Prevention (or Control) Plan (SWPPP or SWPCP). Inspections are also recommended after every major storm event. An Inspection Report is included at the end of this manual to assist with record keeping.

AN INSPECTION DURING A RAIN EVENT IS THE BEST METHOD OF ASSESSING HOW WELL THE AQUIP SYSTEM IS OPERATING

Flow meter

- Verify that the flow rate to Aquip matches the design flow rate. Operating Aquip at a rate other than the designated design flow rate will affect the system performance and may not be allowable under the stormwater permitting rules. Adjust the flow rate as necessary. Opening the flow control valve such that the flow rate is increased will decrease system performance. The flow rate should only be adjusted when the storage tank(s) are full for the Storage Discharge system configuration.

Pretreatment Chamber

For Aquip SBE- with buffering media

- Inspect the amount and distribution of the buffering media. There should be at least 3 inches of buffering media evenly distributed across the media grates.
- Inspect for the accumulation of solids and debris on top of the buffering media. Before removing accumulated debris, drain down the pretreatment chamber through the inlet sample port.
- Inspect for solidification of the buffering media. If present, clumps of buffering media should be broken up with a shovel or the provided maintenance rake.

For Aquip SOI or SOE- with oil coalescing packs

- Inspect the water surface for heavy oil sheen. If a heavy sheen is present, remove the accumulated oil from the surface.
- Inspect the side walls of the Pretreatment Chamber for heavy oil and debris accumulation. If heavy oil and debris are present, follow the maintenance steps described in the Section 3.3.

Inlet Distributor

- Inspect the perforations for the accumulation of debris. The accumulation of any debris should be removed by hand.
- During a storm event, verify that the flow of water out of the perforations is uniform the entire length of pipe. For Storage Discharge configurations, the Inlet Distributor should only be adjusted when the storage tank(s) are full.

Media Bed

- During a storm event, observe the water level above the media bed relative to the Inlet Distributor. Note that the water level may increase during the first 15 minutes of operation.
- Inspect the accumulation of solids on the surface of the media (Figure 5). Observe the appearance of the solids and its distribution across the media surface. If more solids than sand are visible on top of the media, refer to Routine Surface Maintenance Section 3.1.1.
- Check for a hardened or brittle media surface in the absence of solids accumulation. If the media surface is hardened, rake the media to help restore hydraulic capacity.
- Verify that the Energy Dissipation Fabric is clean and laying flat beneath the Inlet Distributor. The Energy Dissipation Fabric may be re-anchored by pushing small amounts of filter sand over the fabric at various intervals.

Outlet Sample Port

- Collect the effluent from the Aquip to observe changes in water clarity. The clarity of the water is best observed using a clear glass/plastic container. As mentioned earlier, water clarity should improve after the first few storms.

Figure 5. Accumulation of solids on the media bed surface

2.3 Optimal Operating Conditions

The Aquip should be maintained regularly for optimal performance and media longevity. Observe the water level within the Filtration Chamber to determine optimal operation. Both of the following conditions need to be met for the Aquip to be operating at optimal conditions:

- Water has been draining through the Inlet Distributor continuously for 15 minutes or more.
- The water level within the filter is above the surface of the media and below the Inlet Distributor (Figure 6)

However, for LIGHT RAIN or INTERMITTENT RAIN conditions, neither of the two conditions may be established.

Should the water level within the Filtration Chamber reach the Inlet Distributor, maintenance should be performed to re-establish the proper flow through Aquip (see Section 3).

Figure 6. Best operating water level in filtration chamber for optimal pollutant removal conditions

2.4 Freezing Weather

The external piping components are empty or nearly so between storm events with the exception of sample ports. If a hard freeze occurs as water is draining down from Aquip, external plumbing on the Aquip can freeze and temporarily impair its operation. The steps below should be followed to minimize damage to external plumbing and get the Aquip back on-line as quickly as possible.

The influent plumbing leading to the Aquip may be susceptible to damage during freezing conditions if a weep hole has not been installed at the pump discharge. For systems installed in freezing climates, StormwateRx LLC recommends heat tracing all above-ground connecting piping to and from Aquip.

The media bed will likely become icy during freezing conditions which will temporarily impair the flow and treatment capability of Aquip. It is important to allow the media bed to fully thaw before conducting stormwater quality sampling. Following are some additional operating tips for freezing conditions.

<u>For Aquip systems with Storage Discharge</u>

1. Insulate or heat-trace the force main lines for this condition.
2. Close the shut-off valve between the above ground storage tank and the Aquip.
3. If no shut off valve has been installed, open the plug between the pretreatment chamber and the filtration chamber to drain down water from the storage tank through Aquip.
4. Once the storage tank has fully drained down, open the inlet sample port located on the inlet pipe to the Aquip. This will drain down the pretreatment chamber.

5. Open the outlet sample port to drain any water that still may remain in the filtration chamber.

Warning: For systems without a shut-off valve between the detention tank and Aquip, the storage tank will drain down through the inlet sample port spilling onto the ground. Owners may favor heat tracing the plumbing instead of emptying the storage tanks for freeze protection.

For Aquip systems with Direct Discharge

1. StormwateRx recommends insulating or heat-tracing all above-ground piping to the Aquip system.
2. Turn off pump.
3. Open the inlet sample port located on the inlet pipe to the Aquip to drain down the pretreatment chamber.
4. Open the outlet sample port to drain any water that still may remain in the filtration chamber.

2.5 Sampling Protocol and Methodology

Water quality samples should be taken only when the system has been maintained and is operating effectively (see Section 2.3). The inlet and outlet sample ports on Aquip provide a convenient and reliable method of taking samples.

AFTER INSTALLING NEW FILTRATION MEDIA, OPERATE THE AQUIP FOR TWO HOURS BEFORE COLLECTING AN EFFLUENT SAMPLE

Use caution when collecting water quality samples to prevent contamination of the sample bottles. A small amount of dirt goes a long way to contaminating a stormwater sample. Make sure the sample port and your hands or gloves are clean BEFORE collecting your compliance sample. The following precautions should be taken immediately before sampling:

1. Using a CLEAN cloth, wipe off any visible dirt from the sample port valve spigot.
2. Open sample valve and allow water to flush through the port for a minimum of 10 seconds.
3. Use the proper unused sample bottle – do not reuse sample bottles.
4. Do not touch the sample bottle to the sample port.
5. Do not put fingers inside or around the sample port or the mouth of the sample bottle.
6. For sample bottles with liquid preservative inside, do not allow the bottle to overflow.
7. Cap the sample bottle as quickly as possible. Store on ice. Ice helps reduce the amount of metals that move from particulate to dissolved phase and reduces the rate of growth of biological organisms within the sample bottles.

StormwateRx recommends sampling the inlet to the Aquip each time that the outlet is sampled. Without the inlet sample data, StormwateRx LLC cannot diagnose or provide recommendations on tuning system performance. The inlet should be sampled approximately 15 minutes before sampling the outlet to get the most representative inlet/outlet sample pair.

3 Maintenance Guidelines

The Aquip, like all filtration systems, requires periodic maintenance to restore the system to its original effectiveness. The type and frequency of maintenance required for the Aquip varies significantly from site to site due to differences in facility operations, upstream stormwater management, and rainfall frequency. Routine inspections conducted on the Aquip will help to determine how frequently to maintain your Aquip stormwater filter (see Section 2.2).

LOADING TO AND MAINTENANCE OF AQUIP CAN BE REDUCED BY IMPROVING UPSTREAM SOURCE CONTROL BMPS.

3.1 Filter Media Maintenance

Maintaining the filter media is the most important step for achieving the optimal results from your Aquip filtration system. The media can be maintained either by cleaning and leveling the surface or replacing specific layers of media. The type of maintenance required is based upon the flow rate through the Aquip and/or the type of pollutants entering the system. Media maintenance is done to provide uniform flow downward through the media, preventing preferential flow and utilizing the entire surface area of the media bed. By providing uniform flow, treatment is maximized.

The layers of media have been configured in a specific arrangement to provide treatment for the identified pollutants in your stormwater. Refer to Figure 7 for media layer nomenclature.

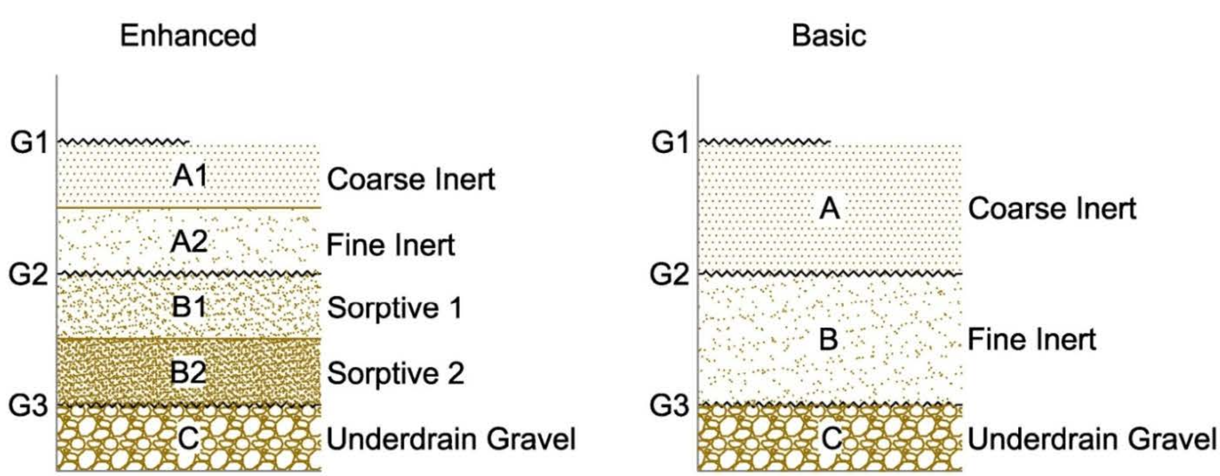

Figure 7. Enhanced and basic media bed configurations

3.1.1 Maintenance Type I – Routine Surface Maintenance

Refer to Figure 7 (page 13) to identify the media and fabric layers described in this section.

Maintenance Description

A Routine Surface Maintenance consists of cleaning the entire media surface by shoveling off and removing the top ¼ - ½ inches of media. The media below the Energy Dissipation Fabric should also be clean at this time. The surface of the media should then be leveled using the filter rake provided.

The Inlet Distributor and Energy Dissipation Fabric should also be inspected and cleaned if necessary at the time of Routine Surface Maintenance (see Section 2.2).

The removed media should be replaced after 2” of the top inert layer is removed as a result of routine surface maintenances. Replenish the removed media with new media if less than 7” of inert media remains on top of the media bed.

SURFACE MAINTENANCE AND MEDIA REPLENTISHMENT DO NOT SERVE AS A REPLACEMENT TO SEASONAL MAINTENANCE BUT DO EXTEND SYSTEM RUN-TIMES

Maintenance Timing/Frequency

A Routine Surface Maintenance should be conducted when the water level within Aquip begins to stack up. Optimal operating conditions for Aquip occur when the following conditions exist:

1. The Aquip has been operating for more than more than 15 minutes.
2. The water level within the Filtration Chamber reaches a point within 3 inches of the lowest point on the Inlet Distributor (Figure 6).

A Routine Surface Maintenance may need to be done as frequently as every 3 – 4 weeks depending on the amount of loading on the Aquip.

Maintenance Steps

The steps in conducting a Routine Surface Maintenance are:

1. Remove and set aside the Energy Dissipation Fabric (Fabric Layer G1, see Figure 7).
2. Clean the Energy Dissipation Fabric if necessary.
3. Clean the entire surface of the media by shoveling off the accumulated solids and the top ¼ - ½ inches of media (approximate). The newly exposed media should look cleaner than the removed media. Remove more depth if necessary.
4. Dispose of the removed media and accumulated debris.
5. Level the surface of the media.

6. Measure the depth of the remaining inert media layer by inserting a shovel directly down into the media until it reaches the lower-lying fabric layer. This will indicate the depth of the inert media layer.
7. Replenish the removed media with new media if less than 7" of the inert layer remains (more than 2" of the inert layer has been removed over the course of several surface maintenances).
8. Re-install the Energy Dissipation Fabric beneath the Inlet Distributor using scoops of sand to hold down the edges.

ROUTINE SURFACE MAINTENANCE HELPS TO AVOID MORE COSTLY FULL MAINTENANCES AND IMPROVES TREATMENT PERFORMANCE

Figure 8. Surface cleaning during a Routine Surface Maintenance

3.1.2 Maintenance Type II – Seasonal Maintenance

Refer to Figure 7 (page 13) to identify the media and fabric layers described in this section.

<u>Maintenance Description</u>
During a Seasonal Maintenance, the inert media on top (Media Layer A) is replaced to restore the proper flow rate through the Aquip. Typically, dirt and debris are trapped within the top layer of media which eventually causes the media to plug.

<u>Maintenance Timing/Frequency</u>
Media replacement is necessary when the proper flow rate through the Aquip cannot be established by a Routine Surface Maintenance or lowering the Adjustable Head Control (see Section 3.2). Seasonal Maintenance is recommended when stormwater sampling shows consistent pollutant reductions and solids loading in the lower-lying media (Media Layer B) is not appreciable.

Maintenance Steps
StormwateRx can provide a quotation for Seasonal Maintenance which includes the new media, filter fabric, and optional technical supervision at the time of the maintenance. The steps to conduct a Seasonal Maintenance are:

1. Set up safety equipment if the system is near vehicle and pedestrian traffic.
2. Sparingly pressure-wash or hand-wipe the side walls of the Aquip prior to removing any media. Cleaning the inside walls of the Aquip will allow the operator to observe the system's most recent operating water level based upon the scum line left behind inside of the Aquip. No detergent or hot water should be used when cleaning the insides of the Aquip.
3. Remove and dispose of the Energy Dissipation Fabric (Fabric Layer G1, see Figure 7).
4. Excavate the spent filter media (Media Layer A) down to the first layer of geotextile fabric (Fabric Layer G2). A shovel or vactor truck may be used to remove the filter media. See Section 5 for media disposal.
5. Remove Fabric Layer G2 and inspect the underlying filter media (Media Layer B).
6. Rake the top three to six inches of media to regenerate Media Layer B. Level and smooth the filter media.
7. Re-install Fabric Layer G2 on the top of Media Layer B.
8. Install the new inert filter media (Media Layer A). Media should be added in uniform, level layers using the level indicators on the side walls of the Aquip as a guide. Each media layer should be leveled before adding the next media layer.
9. Install the new Energy Dissipation Fabric (Fabric Layer G1) on top Media Layer A using scoops of sand to hold down the edges.

When conducting a Seasonal Maintenance, the pretreatment chamber should also be maintained (see Section 3.3).

NO DETERGENT OR HOT WATER SHOULD BE USED WHEN CLEANING THE INSIDES OF THE AQUIP

Figure 9. Vactor service removing the top layers of sand during a Seasonal Maintenance

3.1.3 Maintenance Type III – Full Maintenance

Refer to Figure 7 (page 13) to identify the media and fabric layers described in this section.

Maintenance Description

A Full Maintenance replaces all of the filtration media (Media Layers A and B) not including the underdrain gravel (Media Layer C). The filtering capacity of the media can be exhausted due to a combination of heavy loading, inadequate maintenance of the Aquip, and extended Aquip run-times.

Maintenance Timing/Frequency

Full Maintenance is recommended when a decline in treatment is observed in the water quality sampling and Routine Surface Maintenance is no longer capable of restoring the proper flow. Significant loading in the lower-lying media layers (Media Layer B) will often accompany a decline in treatment.

Maintenance Steps

StormwateRx can provide a quotation for a Full Maintenance which includes the new media, filter fabric, and optional technical supervision at the time of the maintenance. The steps to conduct a Full Maintenance are:

1. Set up safety equipment if the system is near vehicle and pedestrian traffic.
2. Sparingly pressure-wash or hand-wipe the side walls of the Aquip prior to removing any media as shown in Figure 10. Do not use any detergents. Cleaning the inside walls of the Aquip will allow the operator to observe the system's most recent operating water level based upon the scum line left behind inside of the Aquip. No detergent or hot water should be used when cleaning the insides of the Aquip.

Figure 10. Pressure wash the sidewalls of Aquip before removing filter media during a full maintenance.

3. Remove and dispose of the Energy Dissipation Fabric (Fabric Layer G1, see Figure 7). Use a vacuum truck or shovel to remove all spent media (Media Layers A and B). Stop at the geotextile fabric above the underdrain gravel (Fabric Layer G3). The underdrain gravel (Media Layer C) should ***not*** be removed.

DO NOT PRESSURE WASH OR RINSE THE SIDE WALLS OF THE AQUIP ONCE THE FILTRATION MEDIA HAS BEEN REMOVED.

4. Remove the PVC plugs located at each of the ends of the underdrain. Also remove the Adjustable Head Control located on the outlet end of the Aquip by loosening the flanges located on both sides of this PVC loop (see Figure 1).
5. Pressure-wash the insides of the underdrain to flush its insides.
6. Reinstall all of the PVC plugs on the underdrain and the Adjustable Head Control.
7. Install new geotextile fabric (Fabric Layer G3) on top of Media Layer C.
8. Install the new media layers and filter fabric layers as shown in Figure 7. Media should be added in uniform, level layers using the level indicators on the side walls of the Aquip as a guide. Each media layer should be leveled before adding the next media layer.
9. Install a new Energy Dissipation Layer (Fabric Layer G1) on top layer of the media using scoops of sand to hold down the edges.

When conducting a Full Maintenance, the pretreatment chamber should also be maintained (see Section 3.3).

3.2 Adjustable Head Control

The flow rate through the Aquip may be increased using the Adjustable Head Control. This should be done only when the proper flow rate cannot be established with Routine Surface Maintenance. By lowering the Adjustable Head Control, the back pressure within the media bed is reduced allowing the water to flow more freely through the system. The steps to lowering the Adjustable Head Control are:

1. Loosen all of the bolts on the two flanges located on both sides of the Adjustable Head Control. Some bolts may need to be loosened further after the flange assembles change their positioning.
2. Rotate the Adjustable Head Control downward away from the Aquip so that it is positioned parallel to level ground.
3. Evenly tighten the bolts on both flanges. Do not over tighten the bolts. The rubber gasket between the flange assembles will create a seal with even pressure around the flange.

3.3 Pretreatment Chamber Maintenance

The pretreatment chamber should be maintained when performing a Seasonal or Full Maintenance. Inspections of the pretreatment chamber should be performed as part of your routine inspections. The maintenance procedure for each type of pretreatment configuration is described below.

For Aquip SBE- with loose buffering media

1. Remove and dispose of the solids that have accumulated on the surface of the buffering media.
2. Shovel the loose media to one side of the pretreatment chamber.
3. If the walls of the pretreatment chamber are coated in mud or debris, hose down the walls.
4. Lift up and remove the grate exposed by shoveling aside the media.
5. Suspend a pump off of the floor of the pretreatment chamber and pump down the water beneath the buffer media grates.
6. Shovel or vactor out the accumulated solids on the floor of the pretreatment chamber.
7. Replace grates and level the buffering media across the surface of the grates.

Figure 11. Pretreatment chamber (with buffering media) in need of maintenance (left); buffering media after maintenance (right)

For Aquip SOI or SOE- with oil coalescing packs

1. Remove the accumulation of any heavy oil sheen on the water's surface using an oil adsorbent pad(s) or vactor service.
2. Drain down the pretreatment chamber using the inlet sample port.
3. Remove the coalescing packs from pretreatment chamber.
4. Remove the plastic media blocks from stainless steel frame.
5. Clean the plastic media blocks and stainless steel frame using a low pressure hose.
6. Collect and dispose the removed oil and debris.
7. Reassemble coalescing packs and reinstall in pretreatment chamber.

For Aquip SXI - with pretreatment settling

1. Drain down the pretreatment chamber using the inlet sample port.
2. If necessary, hose down the walls of the pretreatment chamber.
3. Suspend a pump off of the floor of the pretreatment chamber and pump down the water beneath the buffer media grates.
4. Shovel or vactor out the accumulated solids on the floor of the pretreatment chamber.

3.4 Oil Skimmer Maintenance

The oil sorbent pad on the oil skimmer should be routinely checked. The sorptive media within the pad will expand when reacting with oil causing the pad to swell in size. The oil sorbent pad should be replaced once the pad has swollen to its maximum size.

3.5 Flow Meter Maintenance

The inside of the flow meter should be cleaned at a minimum of once a year to remove accumulating oil and dirt. Any accumulation on the surfaces of the electrodes will impede the proper operation of the flow meter. Remove the flow meter from the influent line on the Aquip and clean the small metal surfaces (electrodes) and all other surfaces inside of the flow meter using a soft cloth and a 50/50 solution of denatured alcohol and water.

The user manual for the installed flow meter is attached at the end of this O&M manual.

Table 2. Replacement batteries for Aquip flow meters

Type of Flow Meter	Batteries Required
Seametrics 2" Flow Meter	6 AA batteries
Seametrics 3" Flow Meter	6 AA batteries
Seametrics 4" Flow Meter	Battery pack of 2 Lithium XL-205F batteries

4 Troubleshooting

The table below provides a quick reference to address specific issues confronted with the operation of the Aquip. Sections 2 and 3 should be reviewed to reduce the onset of these issues.

Table 3. Aquip Troubleshooting

Symptom	Probable Cause	Recommended Action
Water is spilling over the baffle wall between the Pretreatment Chamber and the Filtration Chamber.	The flow rate into the system is not correct. The Inlet Distributor needs to be cleaned of accumulated debris.	Adjust the flow control valve (see Section 2.2). Remove the accumulated solids within the Inlet Distributor (see Section 2.2).
There is an uneven distribution of water across the media surface or from the Inlet Distributor.	The media surface is not level. Water is channeling unevenly across the media surface. The Inlet Distributor is not properly adjusted. More water is flowing out of one end of the Inlet Distributor more than the other.	Clean the media surface by removing accumulated debris and then level the top of the media to reduce uneven channeling. When the system is operating at the design flow rate, adjust the height of the Inlet Distributor so that the flow out of the pipe is even on both ends (see Section 2.1).
The water level within the Aquip is significantly higher than the inlet distributor (up to the emergency overflow) during Aquip operation.	The flow rate into the system is not correct. Too much solids have accumulated on the media surface. This can be observed as a thin brittle crust or as heavy solids accumulation. Solids have migrated deep within the media bed.	Adjust the flow control valve (see Section 2.2). In either of these cases, use a square point shovel to remove the top 1/4" of sand (approximate, see Section 3.1.1). The Adjustable Head Control should be lowered (see Section 3.3). A Seasonal Maintenance may also be necessary (see Section 3.1.2).
The Aquip is not draining water through the media bed.	Solids accumulation on the media surface is preventing flow through the media.	From the outside edge of the tank, use a shovel to disturb the media surface in several locations. Conduct a Routine Surface Maintenance once the water drains down completely (see Section 3.1.1). A Seasonal Maintenance may be necessary (see Section 3.1.2).
The buffer media racks within the Pretreatment Chamber have been moved out of place.	Heavy oil and/or solids accumulation has accumulated on the bottom side of the buffer media racks allowing the water to push them out of place.	Conduct Pretreatment Chamber Maintenance (see Section 3.4). Clean both sides of the racks by spraying them down with water.
The metals removal efficiency from the Aquip is beginning to decrease.	Loading on the media surface is preventing uniform flow downward through the media. The sorptive media within the media bed is beginning to reach its capacity.	For a brittle or hardened media surface, rake the media to regain the hydraulic capacity. For heavy solids loading (i.e. more solids than sand visible on top), remove the top1/4" of sand (approximate, see Section 3.1.1). A Full Maintenance will be necessary (see Section 3.1.3).

5 Material Disposal

Water and sediment removed from the Aquip filter must be disposed of in accordance with all applicable waste disposal regulations. The removed accumulated sediment in the Aquip can typically be sent to the local landfill. Follow local regulations for standard guidelines for solid waste disposal.

6 Maintenance Support

If you have any questions about maintenance procedures, contact StormwateRx LLC at (800) 680-3543.

7 Best Management Practice Requirements

Achieving the benchmarks consistently requires rigorous implementation of best management practices (BMPs) including source control, structural and treatment BMPs. Treatment BMPs (i.e. the Aquip filtration system) are not designed to operate in the absence of other BMPs. Employing source control practices on a regular basis is essential in extending the life of the Aquip system as heavy pollutant loading can result in a shorter maintenance cycle than expected. The Aquip system is not designed as an all-in-one treatment device for all types and quantities of stormwater pollution.

Your Stormwater Pollution Prevention (or Control) Plan (SWPPP or SWPCP) should address the BMPs appropriate for your facility. During normal business operation, make sure that all best management practices are deployed and maintained. When engaging in operations that are atypical of standard business practices, please utilize source control measures to prevent heavy pollutant loading into the Aquip. The following are a few examples of typically employed practices.

- **Sweeping:** Sweep site on a regular basis, such as daily, weekly or bi-monthly, especially in areas of heavy industrial activities.
- **Covering activities:** When practical, cover significant materials or industrial operations that are outdoors, to prevent stormwater contact with potential pollutants.
- **Spill control:** When a spill occurs, contain and use onsite spill kits to dispose of material.

DO NOT FLUSH SPILLS OF ANY KIND INTO THE AQUIP FILTRATION SYSTEM

- **Catch basin and stormwater conveyance clean out:** When cleaning out catch basins and jetting stormwater conveyance lines turn off the pump that diverts water to the Aquip system. This water should not enter the Aquip system.

JETTING YOUR STORMWATER LINES INTO THE AQUIP FILTRATION SYSTEM IS NOT ADVISED.

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